

## Schedule 1: Designer Information

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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                     | Unit no.                                                                                                      | Lot/con.                             |
| Municipality<br>RICHMOND HILL                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Postal code                         | Plan number/ other description                                                                                |                                      |
| <b>B. Individual who reviews and takes responsibility for design activities</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                     |                                                                                                               |                                      |
| Name<br><b>MICHAEL O'ROURKE</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                     | Firm<br><b>HVAC DESIGNS LTD.</b>                                                                              |                                      |
| Street address<br><b>375 FINLEY AVE</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                     | Unit no.<br><b>202</b>                                                                                        | Lot/con.<br><b>N/A</b>               |
| Municipality<br><b>AJAX</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Postal code<br><b>L1S 2E2</b>       | Province<br><b>ONTARIO</b>                                                                                    | E-mail<br><b>info@hvacdesigns.ca</b> |
| Telephone number<br><b>(905) 619-2300</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Fax number<br><b>(905) 619-2375</b> | Cell number<br>( )                                                                                            |                                      |
| <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<br><input type="checkbox"/> Small Buildings<br><input type="checkbox"/> Large Buildings<br><input type="checkbox"/> Complex Buildings <input checked="" type="checkbox"/> HVAC – House<br><input type="checkbox"/> Building Services<br><input type="checkbox"/> Detection, Lighting and Power<br><input type="checkbox"/> Fire Protection <input type="checkbox"/> Building Structural<br><input type="checkbox"/> Plumbing – House<br><input type="checkbox"/> Plumbing – All Buildings<br><input type="checkbox"/> On-site Sewage Systems |                                     |                                                                                                               |                                      |
| Description of designer's work<br><b>HEAT LOSS / GAIN CALCULATIONS<br/>DUCT SIZING<br/>RESIDENTIAL MECHANICAL VENTILATION DESIGN SUMMARY<br/>RESIDENTIAL SYSTEM DESIGN per CSA-F280-12</b>                                                                                                                                                                                                                                                                                                                                                                                  |                                     | <b>Model:</b> 2011<br><br><b>Project:</b> CENTREFIELD (WEST GORMLEY)                                          |                                      |
| <b>D. Declaration of Designer</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                     |                                                                                                               |                                      |
| I, <u>MICHAEL O'ROURKE</u><br>(print name)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                     | declare that (choose one as appropriate):                                                                     |                                      |
| <input type="checkbox"/> I review and take responsibility for the design work on behalf of a firm registered under subsection 3.2.4. of Division C, of the Building Code. I am qualified, and the firm is registered, in the appropriate classes/categories.<br>Individual BCIN: _____<br>Firm BCIN: _____                                                                                                                                                                                                                                                                  |                                     |                                                                                                               |                                      |
| <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.<br>Individual BCIN: <u>19669</u><br>Basis for exemption from registration and qualification: <u>O.B.C SENTENCE 3.2.4.1 (4)</u>                                                                                                                                                                                                                         |                                     |                                                                                                               |                                      |
| <input type="checkbox"/> The design work is exempt from the registration and qualification requirements of the Building Code.<br>Basis for exemption from registration and qualification: _____                                                                                                                                                                                                                                                                                                                                                                             |                                     |                                                                                                               |                                      |
| I certify that:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                     |                                                                                                               |                                      |
| 1. The information contained in this schedule is true to the best of my knowledge.<br>2. I have submitted this application with the knowledge and consent of the firm.                                                                                                                                                                                                                                                                                                                                                                                                      |                                     |                                                                                                               |                                      |
| September 10, 2021<br>Date                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                     | <br>Signature of Designer |                                      |

**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 qualification under Subsections 3.2.4. and 3.2.5. of Division C.
- Schedule 1 is not required to be completed by 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 license to practise, or a certificate of authorization, issued by the Association of Professional Engineers of Ontario.

Application for a Permit Construct or Demolish – Effective January 1, 2015

| SITE NAME: CENTREFIELD (WEST GORMLEY)<br>BUILDER: ROYAL PINE HOMES |          |            |   |              |   |             |    |             |    | TYPE: 2011   |    | GFA: 1792  |  | DATE: Sep-21<br>LO# 87544 |  | WINTER NATURAL AIR CHANGE RATE 0.283 |  | HEAT LOSS AT °F. 78 |  | HEAT GAIN AT °F. 13 |  | CSA-F280-12<br>SB-12 PERFORMANCE |  |
|--------------------------------------------------------------------|----------|------------|---|--------------|---|-------------|----|-------------|----|--------------|----|------------|--|---------------------------|--|--------------------------------------|--|---------------------|--|---------------------|--|----------------------------------|--|
| ROOM USE                                                           |          | MBR        |   | ENS          |   | KT/BR       |    | BED-2       |    | BED-3        |    | BATH       |  |                           |  |                                      |  |                     |  |                     |  |                                  |  |
| EXP. WALL                                                          | CLG. HT. | 32         | 9 | 15           | 9 | 33          | 10 | 9           | 37 | 9            | 81 | 9          |  |                           |  |                                      |  |                     |  |                     |  |                                  |  |
| FACTORS                                                            |          | LOSS GAIN  |   | LOSS GAIN    |   | LOSS GAIN   |    | LOSS GAIN   |    | LOSS GAIN    |    | LOSS GAIN  |  |                           |  |                                      |  |                     |  |                     |  |                                  |  |
| GRS.WALL AREA                                                      |          | 288        |   | 135          |   | 330         |    | 90          |    | 333          |    | 81         |  |                           |  |                                      |  |                     |  |                     |  |                                  |  |
| GLAZING                                                            |          | LOSS       |   | GAIN         |   | LOSS        |    | GAIN        |    | LOSS         |    | GAIN       |  |                           |  |                                      |  |                     |  |                     |  |                                  |  |
| NORTH                                                              |          | 21.8 16.0  |   | 0 0 0 0      |   | 0 0 0 0     |    | 0 0 0 0     |    | 0 0 0 0      |    | 0 0 0 0    |  |                           |  |                                      |  |                     |  |                     |  |                                  |  |
| EAST                                                               |          | 21.8 41.6  |   | 0 0 0 0      |   | 28 610 1163 |    | 36 784 1496 |    | 0 0 0 0      |    | 0 0 0 0    |  |                           |  |                                      |  |                     |  |                     |  |                                  |  |
| SOUTH                                                              |          | 21.8 24.9  |   | 28 610 697   |   | 16 349 398  |    | 0 0 0 0     |    | 46 1002 1145 |    | 12 261 299 |  |                           |  |                                      |  |                     |  |                     |  |                                  |  |
| WEST                                                               |          | 21.8 41.6  |   | 22 479 914   |   | 0 0 0 0     |    | 0 0 0 0     |    | 0 0 0 0      |    | 0 0 0 0    |  |                           |  |                                      |  |                     |  |                     |  |                                  |  |
| SKYLT.                                                             |          | 35.8 101.2 |   | 0 0 0 0      |   | 0 0 0 0     |    | 0 0 0 0     |    | 0 0 0 0      |    | 0 0 0 0    |  |                           |  |                                      |  |                     |  |                     |  |                                  |  |
| DOORS                                                              |          | 25.8 4.3   |   | 0 0 0 0      |   | 0 0 0 0     |    | 62 261 43   |    | 251 1056 174 |    | 69 290 48  |  |                           |  |                                      |  |                     |  |                     |  |                                  |  |
| NET EXPOSED WALL                                                   |          | 4.2 0.7    |   | 238 1001 165 |   | 119 500 82  |    | 0 0 0 0     |    | 0 0 0 0      |    | 0 0 0 0    |  |                           |  |                                      |  |                     |  |                     |  |                                  |  |
| NET EXPOSED BSMT WALL ABOVE GR                                     |          | 3.7 0.6    |   | 0 0 0 0      |   | 0 0 0 0     |    | 180 237 106 |    | 126 166 74   |    | 112 147 66 |  |                           |  |                                      |  |                     |  |                     |  |                                  |  |
| EXPOSED CLG                                                        |          | 1.3 0.6    |   | 330 434 194  |   | 120 158 71  |    | 1 1         |    | 240 1        |    | 0 0 0 0    |  |                           |  |                                      |  |                     |  |                     |  |                                  |  |
| NO ATTIC EXPOSED CLG                                               |          | 2.8 1.3    |   | 0 0 0 0      |   | 0 0 0 0     |    | 180 470 77  |    | 75 196 32    |    | 0 0 0 0    |  |                           |  |                                      |  |                     |  |                     |  |                                  |  |
| EXPOSED FLOOR                                                      |          | 2.6 0.4    |   | 0 0 0 0      |   | 0 0 0 0     |    | 0 0 0 0     |    | 0 0 0 0      |    | 0 0 0 0    |  |                           |  |                                      |  |                     |  |                     |  |                                  |  |
| BASEMENT/CRAWL HEAT LOSS                                           |          | 0 0 0 0    |   | 0 0 0 0      |   | 0 0 0 0     |    | 0 0 0 0     |    | 0 0 0 0      |    | 0 0 0 0    |  |                           |  |                                      |  |                     |  |                     |  |                                  |  |
| SLAB ON GRADE HEAT LOSS                                            |          | 0 0 0 0    |   | 0 0 0 0      |   | 0 0 0 0     |    | 1577        |    | 3414         |    | 659        |  |                           |  |                                      |  |                     |  |                     |  |                                  |  |
| SUBTOTAL HT LOSS                                                   |          | 2524       |   | 1007         |   | 551         |    | 0.20 0.21   |    | 0.20 0.21    |    | 0.20 0.21  |  |                           |  |                                      |  |                     |  |                     |  |                                  |  |
| SUB TOTAL HT GAIN                                                  |          | 1970       |   | 551          |   | 24          |    | 191         |    | 413          |    | 0          |  |                           |  |                                      |  |                     |  |                     |  |                                  |  |
| LEVEL FACTOR / MULTIPLIER                                          |          | 0.20 0.21  |   | 0.20 0.21    |   | 24          |    | 1           |    | 222          |    | 0          |  |                           |  |                                      |  |                     |  |                     |  |                                  |  |
| AIR CHANGE HEAT LOSS                                               |          | 533        |   | 212          |   | 0           |    | 1           |    | 240          |    | 0          |  |                           |  |                                      |  |                     |  |                     |  |                                  |  |
| AIR CHANGE HEAT GAIN                                               |          | 87         |   | 0            |   | 0           |    | 61          |    | 133          |    | 18         |  |                           |  |                                      |  |                     |  |                     |  |                                  |  |
| DUCT LOSS                                                          |          | 0 0 0 0    |   | 0 0 0 0      |   | 0 0 0 0     |    | 0 0 0 0     |    | 0 0 0 0      |    | 0 0 0 0    |  |                           |  |                                      |  |                     |  |                     |  |                                  |  |
| DUCT GAIN                                                          |          | 2 480 0    |   | 533          |   | 0           |    | 2101        |    | 4548         |    | 846        |  |                           |  |                                      |  |                     |  |                     |  |                                  |  |
| HEAT GAIN PEOPLE                                                   |          | 240        |   | 533          |   | 1219        |    | 3180        |    | 5607         |    | 560        |  |                           |  |                                      |  |                     |  |                     |  |                                  |  |
| HEAT GAIN APPLIANCES/LIGHTS                                        |          | 3056       |   | 3991         |   | 748         |    |             |    |              |    |            |  |                           |  |                                      |  |                     |  |                     |  |                                  |  |
| TOTAL HT LOSS BTU/H                                                |          |            |   |              |   |             |    |             |    |              |    |            |  |                           |  |                                      |  |                     |  |                     |  |                                  |  |
| TOTAL HT GAIN x 1.3 BTU/H                                          |          |            |   |              |   |             |    |             |    |              |    |            |  |                           |  |                                      |  |                     |  |                     |  |                                  |  |

| ROOM USE                       |          | DEN        |    | GRT          |    | KT/BR      |     | PWID         |   | FOY         |     | BAS          |  |
|--------------------------------|----------|------------|----|--------------|----|------------|-----|--------------|---|-------------|-----|--------------|--|
| EXP. WALL                      | CLG. HT. | 33         | 10 | 19           | 10 | 33         | 330 | 80           | 8 | 21          | 125 |              |  |
| FACTORS                        |          | LOSS GAIN  |    | LOSS GAIN    |    | LOSS GAIN  |     | LOSS GAIN    |   | LOSS GAIN   |     | LOSS GAIN    |  |
| GRS.WALL AREA                  |          | 330        |    | 190          |    | 330        |     | 80           |   | 231         |     | 875          |  |
| GLAZING                        |          | LOSS       |    | GAIN         |    | LOSS       |     | LOSS         |   | LOSS        |     | LOSS         |  |
| NORTH                          |          | 21.8 16.0  |    | 0 0 0 0      |    | 0 0 0 0    |     | 0 0 0 0      |   | 0 0 0 0     |     | 0 0 0 0      |  |
| EAST                           |          | 21.8 41.6  |    | 37 806 1537  |    | 0 0 0 0    |     | 0 0 0 0      |   | 0 0 0 0     |     | 0 0 0 0      |  |
| SOUTH                          |          | 21.8 24.9  |    | 37 806 921   |    | 28 610 597 |     | 34 741 847   |   | 20 436 498  |     | 9 196 224    |  |
| WEST                           |          | 21.8 41.6  |    | 0 0 0 0      |    | 0 0 0 0    |     | 64 1394 2659 |   | 0 0 0 0     |     | 3 65 125     |  |
| SKYLT.                         |          | 35.8 101.2 |    | 0 0 0 0      |    | 0 0 0 0    |     | 0 0 0 0      |   | 0 0 0 0     |     | 0 0 0 0      |  |
| DOORS                          |          | 25.8 4.3   |    | 0 0 0 0      |    | 20 517 85  |     | 0 0 0 0      |   | 40 1034 170 |     | 20 517 85    |  |
| NET EXPOSED WALL               |          | 4.2 0.7    |    | 266 1077 177 |    | 142 597 98 |     | 80 336 55    |   | 171 719 118 |     | 0 0 0 0      |  |
| NET EXPOSED BSMT WALL ABOVE GR |          | 3.7 0.6    |    | 0 0 0 0      |    | 0 0 0 0    |     | 0 0 0 0      |   | 0 0 0 0     |     | 0 0 0 0      |  |
| EXPOSED CLG                    |          | 1.3 0.6    |    | 0 0 0 0      |    | 0 0 0 0    |     | 0 0 0 0      |   | 0 0 0 0     |     | 375 1381 227 |  |
| NO ATTIC EXPOSED CLG           |          | 2.8 1.3    |    | 0 0 0 0      |    | 0 0 0 0    |     | 0 0 0 0      |   | 0 0 0 0     |     | 0 0 0 0      |  |
| EXPOSED FLOOR                  |          | 2.6 0.4    |    | 0 0 0 0      |    | 0 0 0 0    |     | 0 0 0 0      |   | 0 0 0 0     |     | 0 0 0 0      |  |
| BASEMENT/CRAWL HEAT LOSS       |          | 0 0 0 0    |    | 0 0 0 0      |    | 0 0 0 0    |     | 0 0 0 0      |   | 0 0 0 0     |     | 0 0 0 0      |  |
| SLAB ON GRADE HEAT LOSS        |          | 0 0 0 0    |    | 0 0 0 0      |    | 0 0 0 0    |     | 0 0 0 0      |   | 0 0 0 0     |     | 4095         |  |
| SUBTOTAL HT LOSS               |          | 2689       |    | 1724         |    | 3110       |     | 336          |   | 2189        |     | 6254         |  |
| SUB TOTAL HT GAIN              |          | 2636       |    | 880          |    | 3666       |     | 55           |   | 786         |     | 661          |  |
| LEVEL FACTOR / MULTIPLIER      |          | 0.30 0.29  |    | 0.30 0.29    |    | 0.30 0.29  |     | 0.30 0.29    |   | 0.30 0.29   |     | 0.50 0.78    |  |
| AIR CHANGE HEAT LOSS           |          | 781        |    | 501          |    | 904        |     | 98           |   | 636         |     | 4865         |  |
| AIR CHANGE HEAT GAIN           |          | 116        |    | 39           |    | 161        |     | 2            |   | 35          |     | 29           |  |
| DUCT LOSS                      |          | 0 0 0 0    |    | 0 0 0 0      |    | 0 0 0 0    |     | 0 0 0 0      |   | 0 0 0 0     |     | 0 0 0 0      |  |
| DUCT GAIN                      |          | 0 0 0 0    |    | 0 0 0 0      |    | 0 0 0 0    |     | 0 0 0 0      |   | 0 0 0 0     |     | 0 0 0 0      |  |
| HEAT GAIN PEOPLE               |          | 240        |    | 533          |    | 533        |     | 0            |   | 2825        |     | 533          |  |
| HEAT GAIN APPLIANCES/LIGHTS    |          | 3470       |    | 2225         |    | 4014       |     | 434          |   | 1057        |     | 11119        |  |
| TOTAL HT LOSS BTU/H            |          |            |    |              |    |            |     |              |   |             |     | 1590         |  |
| TOTAL HT GAIN x 1.3 BTU/H      |          |            |    |              |    |            |     |              |   |             |     |              |  |

TOTAL HEAT GAIN BTU/H: 28866 TONS: 2.41 LOSS DUE TO VENTILATION LOAD BTU/H: 1336 STRUCTURAL HEAT LOSS: 35858 TOTAL COMBINED HEAT LOSS BTU/H: 37194

*Michael O'Rourke*

SITE NAME: CENTREFIELD (WEST GORMLEY)  
BUILDER: ROYAL PINE HOMES

TYPE: 2011  
DATE: Sep-21  
GFA: 1792 LO# 87544

HEATING CFM 875 COOLING CFM 875  
TOTAL HEAT LOSS 35,858 TOTAL HEAT GAIN 28,647  
AIR FLOW RATE CFM 24.4 AIR FLOW RATE CFM 30.54

**\*\*CARRIER**  
**59TN6A-060-14V**  
FAN SPEED 60  
LOW 820  
MEDIUM 875  
HIGH 1520

AFUE = 97 %  
INPUT (BTU/H) = 60,000  
OUTPUT (BTU/H) = 58,000

| RUN COUNT | 4th | 3rd | 2nd | 1st | Bas |
|-----------|-----|-----|-----|-----|-----|
| S/A       | 0   | 0   | 8   | 7   | 4   |
| R/A       | 0   | 0   | 4   | 2   | 1   |

DESIGN CFM = 875  
CFM @ 5" E.S.P.  
TEMPERATURE RISE 61 °F

All S/A diffusers 4"x10" unless noted otherwise on layout.  
All S/A runs 5"Ø unless noted otherwise on layout.

| RUN #                     | 1    | 2    | 3     | 4     | 5     | 6     | 7    | 10   | 11   | 12   | 13   | 14    | 15    | 18   | 19   | 21   | 22   | 23   | 24   |
|---------------------------|------|------|-------|-------|-------|-------|------|------|------|------|------|-------|-------|------|------|------|------|------|------|
| ROOM NAME                 | MBR  | ENS  | BED-2 | BED-2 | BED-3 | BED-3 | BATH | MBR  | DEN  | DEN  | GRT  | KT/BR | KT/BR | PWD  | FOY  | BAS  | BAS  | BAS  | BAS  |
| RM LOSS MBH               | 1.53 | 1.22 | 1.05  | 1.05  | 2.27  | 2.27  | 0.85 | 1.53 | 1.73 | 1.73 | 2.22 | 2.01  | 2.01  | 0.43 | 2.82 | 2.78 | 2.78 | 2.78 | 2.78 |
| CFM PER RUN HEAT          | 37   | 30   | 26    | 26    | 55    | 55    | 21   | 37   | 42   | 42   | 54   | 49    | 49    | 11   | 69   | 68   | 68   | 68   | 68   |
| RM GAIN MBH               | 2.00 | 0.75 | 1.59  | 1.59  | 2.80  | 2.80  | 0.56 | 2.00 | 2.14 | 2.14 | 1.89 | 2.83  | 2.83  | 0.08 | 1.07 | 0.40 | 0.40 | 0.40 | 0.40 |
| CFM PER RUN COOLING       | 61   | 23   | 49    | 49    | 86    | 86    | 17   | 61   | 65   | 65   | 58   | 87    | 87    | 2    | 33   | 12   | 12   | 12   | 12   |
| ADJUSTED PRESSURE         | 0.17 | 0.17 | 0.17  | 0.17  | 0.16  | 0.16  | 0.17 | 0.17 | 0.17 | 0.17 | 0.17 | 0.16  | 0.16  | 0.17 | 0.17 | 0.17 | 0.17 | 0.17 | 0.17 |
| ACTUAL DUCT LGH           | 72   | 59   | 38    | 33    | 35    | 32    | 45   | 62   | 7    | 11   | 55   | 47    | 50    | 22   | 25   | 58   | 44   | 24   | 16   |
| EQUIVALENT LENGTH         | 190  | 180  | 110   | 120   | 170   | 150   | 130  | 150  | 150  | 130  | 150  | 140   | 130   | 110  | 110  | 110  | 160  | 120  | 110  |
| TOTAL EFFECTIVE LENGTH    | 262  | 239  | 148   | 153   | 205   | 182   | 175  | 212  | 157  | 141  | 205  | 187   | 180   | 132  | 135  | 168  | 204  | 144  | 126  |
| ADJUSTED PRESSURE         | 0.07 | 0.07 | 0.12  | 0.11  | 0.08  | 0.09  | 0.1  | 0.08 | 0.12 | 0.12 | 0.08 | 0.09  | 0.09  | 0.13 | 0.13 | 0.1  | 0.08 | 0.12 | 0.14 |
| ROUND DUCT SIZE           | 6    | 4    | 5     | 4     | 6     | 6     | 4    | 6    | 5    | 5    | 5    | 6     | 6     | 5    | 5    | 5    | 5    | 5    | 5    |
| HEATING VELOCITY (ft/min) | 189  | 344  | 191   | 298   | 280   | 280   | 241  | 189  | 308  | 308  | 396  | 250   | 250   | 126  | 507  | 499  | 499  | 499  | 499  |
| COOLING VELOCITY (ft/min) | 311  | 264  | 360   | 562   | 438   | 438   | 195  | 311  | 477  | 477  | 426  | 444   | 444   | 23   | 242  | 88   | 88   | 88   | 88   |
| OUTLET GRILL SIZE         | 4X10 | 3X10 | 3X10  | 3X10  | 4X10  | 4X10  | 3X10 | 4X10 | 3X10 | 3X10 | 3X10 | 4X10  | 4X10  | 3X10 | 3X10 | 3X10 | 3X10 | 3X10 | 3X10 |
| TRUNK                     | A    | A    | D     | D     | D     | D     | C    | A    | D    | D    | A    | A     | B     | C    | C    | B    | A    | B    | D    |

TYPE: 2011  
SITE NAME: CENTREFIELD (WEST GORMLEY)

LO # 87544

**RESIDENTIAL MECHANICAL VENTILATION DESIGN SUMMARY**

| COMBUSTION APPLIANCES                  |                                                      | 9.32.3.1(1) |
|----------------------------------------|------------------------------------------------------|-------------|
| a) <input checked="" type="checkbox"/> | Direct vent (sealed combustion) only                 |             |
| b) <input type="checkbox"/>            | Positive venting induced draft (except fireplaces)   |             |
| c) <input type="checkbox"/>            | Natural draft, B-vent or induced draft gas fireplace |             |
| 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 |

| HOUSE TYPE                          |                                                         | 9.32.1(2) |
|-------------------------------------|---------------------------------------------------------|-----------|
| <input checked="" type="checkbox"/> | I Type a) or b) appliance only, no solid fuel           |           |
| <input type="checkbox"/>            | II Type I except with solid fuel (including fireplaces) |           |
| <input type="checkbox"/>            | III Any Type c) appliance                               |           |
| <input type="checkbox"/>            | IV Type I, or II with electric space heat               |           |
| <input type="checkbox"/>            | Other: Type I, II or IV no forced air                   |           |

| SYSTEM DESIGN OPTIONS               |                                                 | O.N.H.W.P. |
|-------------------------------------|-------------------------------------------------|------------|
| <input type="checkbox"/>            | 1 Exhaust only/Forced Air System                |            |
| <input type="checkbox"/>            | 2 HRV with Ducting/Forced Air System            |            |
| <input checked="" type="checkbox"/> | 3 HRV Simplified/connected to forced air system |            |
| <input type="checkbox"/>            | 4 HRV with Ducting/non forced air system        |            |
| <input type="checkbox"/>            | Part 6 Design                                   |            |

| TOTAL VENTILATION CAPACITY |              | 9.32.3.3(1) |
|----------------------------|--------------|-------------|
| Basement + Master Bedroom  | 2 @ 21.2 cfm | 42.4 cfm    |
| Other Bedrooms             | 2 @ 10.6 cfm | 21.2 cfm    |
| Kitchen & Bathrooms        | 4 @ 10.6 cfm | 42.4 cfm    |
| Other Rooms                | 3 @ 10.6 cfm | 31.8 cfm    |
| Table 9.32.3.A.            | TOTAL        | 137.8 cfm   |

| PRINCIPAL VENTILATION CAPACITY REQUIRED |      | 9.32.3.4.(1) |
|-----------------------------------------|------|--------------|
| 1 Bedroom                               | 31.8 | cfm          |
| 2 Bedroom                               | 47.7 | cfm          |
| 3 Bedroom                               | 63.6 | cfm          |
| 4 Bedroom                               | 79.5 | cfm          |
| 5 Bedroom                               | 95.4 | cfm          |
| TOTAL                                   |      | 63.6 cfm     |

| SUPPLEMENTAL VENTILATION CAPACITY |       | 9.32.3.5. |
|-----------------------------------|-------|-----------|
| Total Ventilation Capacity        | 137.8 | cfm       |
| Less Principal Ventil. Capacity   | 63.6  | cfm       |
| Required Supplemental Capacity    | 74.2  | cfm       |

| PRINCIPAL EXHAUST FAN CAPACITY |                                                  |
|--------------------------------|--------------------------------------------------|
| Model: VANE 65H                | Location: BSMT                                   |
| 63.6 cfm                       | <input checked="" type="checkbox"/> HVI Approved |

| PRINCIPAL EXHAUST HEAT LOSS CALCULATION |        |        |        |      |
|-----------------------------------------|--------|--------|--------|------|
| CFM                                     | ΔT °F  | FACTOR | % LOSS |      |
| 63.6 CFM                                | X 78 F | X 1.08 | X      | 0.25 |

| SUPPLEMENTAL FANS BY INSTALLING CONTRACTOR |                          |     |                                     |       |
|--------------------------------------------|--------------------------|-----|-------------------------------------|-------|
| Location                                   | Model                    | cfm | HVI                                 | Sones |
| ENS                                        | BY INSTALLING CONTRACTOR | 50  | <input checked="" type="checkbox"/> | 3.5   |
| BATH                                       | BY INSTALLING CONTRACTOR | 50  | <input checked="" type="checkbox"/> | 3.5   |
| PWD                                        | BY INSTALLING CONTRACTOR | 50  | <input checked="" type="checkbox"/> | 3.5   |

| HEAT RECOVERY VENTILATOR |                                                  | 9.32.3.11. |
|--------------------------|--------------------------------------------------|------------|
| Model: VANE 65H          |                                                  |            |
| 155 cfm high             | 64 cfm low                                       |            |
| 75 % Sensible Efficiency | <input checked="" type="checkbox"/> HVI Approved |            |
| @ 32 deg F ( 0 deg C)    |                                                  |            |

| LOCATION OF INSTALLATION |                   |
|--------------------------|-------------------|
| Lot:                     | Concession        |
| Township                 | Plan:             |
| Address                  |                   |
| Roll #                   | Building Permit # |

| BUILDER: ROYAL PINE HOMES |        |
|---------------------------|--------|
| Name:                     |        |
| Address:                  |        |
| City:                     |        |
| Telephone #:              | Fax #: |

| INSTALLING CONTRACTOR |        |
|-----------------------|--------|
| Name:                 |        |
| Address:              |        |
| City:                 |        |
| Telephone #:          | Fax #: |

| DESIGNER CERTIFICATION                                                                                        |                                                                                       |
|---------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| I hereby certify that this ventilation system has been designed in accordance with the Ontario Building Code. |                                                                                       |
| Name:                                                                                                         | HVAC Designs Ltd.                                                                     |
| Signature:                                                                                                    |  |
| HRAI #                                                                                                        | 001820                                                                                |
| Date:                                                                                                         | September-21                                                                          |

| CSA F280-12 Residential Heat Loss and Heat Gain Calculations                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                    |                                                                                                                                        |                                                   |                                                                                   |                   |                                                                 |                                                   |                                                                                   |      |       |       |       |       |        |      |        |       |       |     |       |       |        |   |   |       |        |   |  |              |        |  |  |          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |  |                               |  |  |  |  |                    |                     |       |                         |    |     |    |                         |    |    |   |  |  |  |       |  |  |  |    |  |  |  |    |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|----------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------|-----------------------------------------------------------------------------------|-------------------|-----------------------------------------------------------------|---------------------------------------------------|-----------------------------------------------------------------------------------|------|-------|-------|-------|-------|--------|------|--------|-------|-------|-----|-------|-------|--------|---|---|-------|--------|---|--|--------------|--------|--|--|----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|-------------------------------|--|--|--|--|--------------------|---------------------|-------|-------------------------|----|-----|----|-------------------------|----|----|---|--|--|--|-------|--|--|--|----|--|--|--|----|
| Formula Sheet (For Air Leakage / Ventilation Calculation)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                    |                                                                                                                                        |                                                   |                                                                                   |                   |                                                                 |                                                   |                                                                                   |      |       |       |       |       |        |      |        |       |       |     |       |       |        |   |   |       |        |   |  |              |        |  |  |          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |  |                               |  |  |  |  |                    |                     |       |                         |    |     |    |                         |    |    |   |  |  |  |       |  |  |  |    |  |  |  |    |
| LO#: 87544                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Model: 2011        | Builder: ROYAL PINE HOMES                                                                                                              | Date: 9/10/2021                                   |                                                                                   |                   |                                                                 |                                                   |                                                                                   |      |       |       |       |       |        |      |        |       |       |     |       |       |        |   |   |       |        |   |  |              |        |  |  |          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |  |                               |  |  |  |  |                    |                     |       |                         |    |     |    |                         |    |    |   |  |  |  |       |  |  |  |    |  |  |  |    |
| Volume Calculation                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                    | Air Change & Delta T Data                                                                                                              |                                                   |                                                                                   |                   |                                                                 |                                                   |                                                                                   |      |       |       |       |       |        |      |        |       |       |     |       |       |        |   |   |       |        |   |  |              |        |  |  |          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |  |                               |  |  |  |  |                    |                     |       |                         |    |     |    |                         |    |    |   |  |  |  |       |  |  |  |    |  |  |  |    |
| <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>House Volume Level</th> <th>Floor Area (ft²)</th> <th>Floor Height (ft)</th> <th>Volume (ft³)</th> </tr> </thead> <tbody> <tr> <td>Bsmt</td> <td>782</td> <td>10</td> <td>7820</td> </tr> <tr> <td>First</td> <td>782</td> <td>10</td> <td>7820</td> </tr> <tr> <td>Second</td> <td>1010</td> <td>9</td> <td>9090</td> </tr> <tr> <td>Third</td> <td>0</td> <td>9</td> <td>0</td> </tr> <tr> <td>Fourth</td> <td>0</td> <td>9</td> <td>0</td> </tr> <tr> <td colspan="2" style="text-align: right;">Total:</td> <td></td> <td>24,730.0 ft³</td> </tr> <tr> <td colspan="2" style="text-align: right;">Total:</td> <td></td> <td>700.3 m³</td> </tr> </tbody> </table>                                                                                                                                                                                                                                                                                                                               |                    | House Volume Level                                                                                                                     | Floor Area (ft²)                                  | Floor Height (ft)                                                                 | Volume (ft³)      | Bsmt                                                            | 782                                               | 10                                                                                | 7820 | First | 782   | 10    | 7820  | Second | 1010 | 9      | 9090  | Third | 0   | 9     | 0     | Fourth | 0 | 9 | 0     | Total: |   |  | 24,730.0 ft³ | Total: |  |  | 700.3 m³ | <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="4">Design Temperature Difference</th> </tr> <tr> <th></th> <th>T<sub>in</sub> °C</th> <th>T<sub>out</sub> °C</th> <th>ΔT °C</th> </tr> </thead> <tbody> <tr> <td>Winter DTD<sub>h</sub></td> <td>22</td> <td>-21</td> <td>43</td> </tr> <tr> <td>Summer DTD<sub>c</sub></td> <td>24</td> <td>31</td> <td>7</td> </tr> <tr> <td></td> <td></td> <td></td> <td>ΔT °F</td> </tr> <tr> <td></td> <td></td> <td></td> <td>78</td> </tr> <tr> <td></td> <td></td> <td></td> <td>13</td> </tr> </tbody> </table> |  | Design Temperature Difference |  |  |  |  | T <sub>in</sub> °C | T <sub>out</sub> °C | ΔT °C | Winter DTD <sub>h</sub> | 22 | -21 | 43 | Summer DTD <sub>c</sub> | 24 | 31 | 7 |  |  |  | ΔT °F |  |  |  | 78 |  |  |  | 13 |
| House Volume Level                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Floor Area (ft²)   | Floor Height (ft)                                                                                                                      | Volume (ft³)                                      |                                                                                   |                   |                                                                 |                                                   |                                                                                   |      |       |       |       |       |        |      |        |       |       |     |       |       |        |   |   |       |        |   |  |              |        |  |  |          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |  |                               |  |  |  |  |                    |                     |       |                         |    |     |    |                         |    |    |   |  |  |  |       |  |  |  |    |  |  |  |    |
| Bsmt                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 782                | 10                                                                                                                                     | 7820                                              |                                                                                   |                   |                                                                 |                                                   |                                                                                   |      |       |       |       |       |        |      |        |       |       |     |       |       |        |   |   |       |        |   |  |              |        |  |  |          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |  |                               |  |  |  |  |                    |                     |       |                         |    |     |    |                         |    |    |   |  |  |  |       |  |  |  |    |  |  |  |    |
| First                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 782                | 10                                                                                                                                     | 7820                                              |                                                                                   |                   |                                                                 |                                                   |                                                                                   |      |       |       |       |       |        |      |        |       |       |     |       |       |        |   |   |       |        |   |  |              |        |  |  |          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |  |                               |  |  |  |  |                    |                     |       |                         |    |     |    |                         |    |    |   |  |  |  |       |  |  |  |    |  |  |  |    |
| Second                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 1010               | 9                                                                                                                                      | 9090                                              |                                                                                   |                   |                                                                 |                                                   |                                                                                   |      |       |       |       |       |        |      |        |       |       |     |       |       |        |   |   |       |        |   |  |              |        |  |  |          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |  |                               |  |  |  |  |                    |                     |       |                         |    |     |    |                         |    |    |   |  |  |  |       |  |  |  |    |  |  |  |    |
| Third                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 0                  | 9                                                                                                                                      | 0                                                 |                                                                                   |                   |                                                                 |                                                   |                                                                                   |      |       |       |       |       |        |      |        |       |       |     |       |       |        |   |   |       |        |   |  |              |        |  |  |          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |  |                               |  |  |  |  |                    |                     |       |                         |    |     |    |                         |    |    |   |  |  |  |       |  |  |  |    |  |  |  |    |
| Fourth                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 0                  | 9                                                                                                                                      | 0                                                 |                                                                                   |                   |                                                                 |                                                   |                                                                                   |      |       |       |       |       |        |      |        |       |       |     |       |       |        |   |   |       |        |   |  |              |        |  |  |          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |  |                               |  |  |  |  |                    |                     |       |                         |    |     |    |                         |    |    |   |  |  |  |       |  |  |  |    |  |  |  |    |
| Total:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                    |                                                                                                                                        | 24,730.0 ft³                                      |                                                                                   |                   |                                                                 |                                                   |                                                                                   |      |       |       |       |       |        |      |        |       |       |     |       |       |        |   |   |       |        |   |  |              |        |  |  |          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |  |                               |  |  |  |  |                    |                     |       |                         |    |     |    |                         |    |    |   |  |  |  |       |  |  |  |    |  |  |  |    |
| Total:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                    |                                                                                                                                        | 700.3 m³                                          |                                                                                   |                   |                                                                 |                                                   |                                                                                   |      |       |       |       |       |        |      |        |       |       |     |       |       |        |   |   |       |        |   |  |              |        |  |  |          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |  |                               |  |  |  |  |                    |                     |       |                         |    |     |    |                         |    |    |   |  |  |  |       |  |  |  |    |  |  |  |    |
| Design Temperature Difference                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                    |                                                                                                                                        |                                                   |                                                                                   |                   |                                                                 |                                                   |                                                                                   |      |       |       |       |       |        |      |        |       |       |     |       |       |        |   |   |       |        |   |  |              |        |  |  |          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |  |                               |  |  |  |  |                    |                     |       |                         |    |     |    |                         |    |    |   |  |  |  |       |  |  |  |    |  |  |  |    |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | T <sub>in</sub> °C | T <sub>out</sub> °C                                                                                                                    | ΔT °C                                             |                                                                                   |                   |                                                                 |                                                   |                                                                                   |      |       |       |       |       |        |      |        |       |       |     |       |       |        |   |   |       |        |   |  |              |        |  |  |          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |  |                               |  |  |  |  |                    |                     |       |                         |    |     |    |                         |    |    |   |  |  |  |       |  |  |  |    |  |  |  |    |
| Winter DTD <sub>h</sub>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 22                 | -21                                                                                                                                    | 43                                                |                                                                                   |                   |                                                                 |                                                   |                                                                                   |      |       |       |       |       |        |      |        |       |       |     |       |       |        |   |   |       |        |   |  |              |        |  |  |          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |  |                               |  |  |  |  |                    |                     |       |                         |    |     |    |                         |    |    |   |  |  |  |       |  |  |  |    |  |  |  |    |
| Summer DTD <sub>c</sub>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 24                 | 31                                                                                                                                     | 7                                                 |                                                                                   |                   |                                                                 |                                                   |                                                                                   |      |       |       |       |       |        |      |        |       |       |     |       |       |        |   |   |       |        |   |  |              |        |  |  |          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |  |                               |  |  |  |  |                    |                     |       |                         |    |     |    |                         |    |    |   |  |  |  |       |  |  |  |    |  |  |  |    |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                    |                                                                                                                                        | ΔT °F                                             |                                                                                   |                   |                                                                 |                                                   |                                                                                   |      |       |       |       |       |        |      |        |       |       |     |       |       |        |   |   |       |        |   |  |              |        |  |  |          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |  |                               |  |  |  |  |                    |                     |       |                         |    |     |    |                         |    |    |   |  |  |  |       |  |  |  |    |  |  |  |    |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                    |                                                                                                                                        | 78                                                |                                                                                   |                   |                                                                 |                                                   |                                                                                   |      |       |       |       |       |        |      |        |       |       |     |       |       |        |   |   |       |        |   |  |              |        |  |  |          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |  |                               |  |  |  |  |                    |                     |       |                         |    |     |    |                         |    |    |   |  |  |  |       |  |  |  |    |  |  |  |    |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                    |                                                                                                                                        | 13                                                |                                                                                   |                   |                                                                 |                                                   |                                                                                   |      |       |       |       |       |        |      |        |       |       |     |       |       |        |   |   |       |        |   |  |              |        |  |  |          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |  |                               |  |  |  |  |                    |                     |       |                         |    |     |    |                         |    |    |   |  |  |  |       |  |  |  |    |  |  |  |    |
| 5.2.3.1 Heat Loss due to Air Leakage                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                    | 6.2.6 Sensible Gain due to Air Leakage                                                                                                 |                                                   |                                                                                   |                   |                                                                 |                                                   |                                                                                   |      |       |       |       |       |        |      |        |       |       |     |       |       |        |   |   |       |        |   |  |              |        |  |  |          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |  |                               |  |  |  |  |                    |                     |       |                         |    |     |    |                         |    |    |   |  |  |  |       |  |  |  |    |  |  |  |    |
| $HL_{airb} = LR_{airh} \times \frac{V_b}{3.6} \times DTD_h \times 1.2$ <p>0.283 x 194.52 x 43 °C x 1.2 = 2852 W</p> <p>= 9730 Btu/h</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                    | $HG_{salb} = LR_{airc} \times \frac{V_b}{3.6} \times DTD_c \times 1.2$ <p>= 0.086 x 194.52 x 7 °C x 1.2 = 142 W</p> <p>= 485 Btu/h</p> |                                                   |                                                                                   |                   |                                                                 |                                                   |                                                                                   |      |       |       |       |       |        |      |        |       |       |     |       |       |        |   |   |       |        |   |  |              |        |  |  |          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |  |                               |  |  |  |  |                    |                     |       |                         |    |     |    |                         |    |    |   |  |  |  |       |  |  |  |    |  |  |  |    |
| 5.2.3.2 Heat Loss due to Mechanical Ventilation                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                    | 6.2.7 Sensible heat Gain due to Ventilation                                                                                            |                                                   |                                                                                   |                   |                                                                 |                                                   |                                                                                   |      |       |       |       |       |        |      |        |       |       |     |       |       |        |   |   |       |        |   |  |              |        |  |  |          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |  |                               |  |  |  |  |                    |                     |       |                         |    |     |    |                         |    |    |   |  |  |  |       |  |  |  |    |  |  |  |    |
| $HL_{vaib} = PVC \times DTD_h \times 1.08 \times (1 - E)$ <p>64 CFM x 78 °F x 1.08 x 0.25 = 1336 Btu/h</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                    | $HL_{vaib} = PVC \times DTD_h \times 1.08 \times (1 - E)$ <p>64 CFM x 13 °F x 1.08 x 0.25 = 220 Btu/h</p>                              |                                                   |                                                                                   |                   |                                                                 |                                                   |                                                                                   |      |       |       |       |       |        |      |        |       |       |     |       |       |        |   |   |       |        |   |  |              |        |  |  |          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |  |                               |  |  |  |  |                    |                     |       |                         |    |     |    |                         |    |    |   |  |  |  |       |  |  |  |    |  |  |  |    |
| 5.2.3.3 Calculation of Air Change Heat Loss for Each Room (Floor Multiplier Section)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                    |                                                                                                                                        |                                                   |                                                                                   |                   |                                                                 |                                                   |                                                                                   |      |       |       |       |       |        |      |        |       |       |     |       |       |        |   |   |       |        |   |  |              |        |  |  |          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |  |                               |  |  |  |  |                    |                     |       |                         |    |     |    |                         |    |    |   |  |  |  |       |  |  |  |    |  |  |  |    |
| $HL_{airr} = Level Factor \times HL_{airbv} \times \{(HL_{agcr} + HL_{bgcr}) \div (HL_{agclvl} + HL_{bgclvl})\}$ <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Level</th> <th>Level Factor (LF)</th> <th>HL<sub>airbv</sub> Air Leakage + Ventilation Heat Loss (Btu/h)</th> <th>Level Conductive Heat Loss: (HL<sub>clvl</sub>)</th> <th>Air Leakage Heat Loss Multiplier (LF x HL<sub>airbv</sub> / HL<sub>clvl</sub>)</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>0.5</td> <td rowspan="4" style="text-align: center; vertical-align: middle;">9,730</td> <td>6,254</td> <td>0.778</td> </tr> <tr> <td>2</td> <td>0.3</td> <td>10,048</td> <td>0.291</td> </tr> <tr> <td>3</td> <td>0.2</td> <td>9,220</td> <td>0.211</td> </tr> <tr> <td>4</td> <td>0</td> <td>0</td> <td>0.000</td> </tr> <tr> <td>5</td> <td>0</td> <td></td> <td>0</td> <td>0.000</td> </tr> </tbody> </table> <p>*HL<sub>airbv</sub> = Air leakage heat loss + ventilation heat loss<br/>*For a balanced or supply only ventilation system HL<sub>airve</sub> = 0</p> |                    |                                                                                                                                        |                                                   | Level                                                                             | Level Factor (LF) | HL <sub>airbv</sub> Air Leakage + Ventilation Heat Loss (Btu/h) | Level Conductive Heat Loss: (HL <sub>clvl</sub> ) | Air Leakage Heat Loss Multiplier (LF x HL <sub>airbv</sub> / HL <sub>clvl</sub> ) | 1    | 0.5   | 9,730 | 6,254 | 0.778 | 2      | 0.3  | 10,048 | 0.291 | 3     | 0.2 | 9,220 | 0.211 | 4      | 0 | 0 | 0.000 | 5      | 0 |  | 0            | 0.000  |  |  |          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |  |                               |  |  |  |  |                    |                     |       |                         |    |     |    |                         |    |    |   |  |  |  |       |  |  |  |    |  |  |  |    |
| Level                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Level Factor (LF)  | HL <sub>airbv</sub> Air Leakage + Ventilation Heat Loss (Btu/h)                                                                        | Level Conductive Heat Loss: (HL <sub>clvl</sub> ) | Air Leakage Heat Loss Multiplier (LF x HL <sub>airbv</sub> / HL <sub>clvl</sub> ) |                   |                                                                 |                                                   |                                                                                   |      |       |       |       |       |        |      |        |       |       |     |       |       |        |   |   |       |        |   |  |              |        |  |  |          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |  |                               |  |  |  |  |                    |                     |       |                         |    |     |    |                         |    |    |   |  |  |  |       |  |  |  |    |  |  |  |    |
| 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 0.5                | 9,730                                                                                                                                  | 6,254                                             | 0.778                                                                             |                   |                                                                 |                                                   |                                                                                   |      |       |       |       |       |        |      |        |       |       |     |       |       |        |   |   |       |        |   |  |              |        |  |  |          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |  |                               |  |  |  |  |                    |                     |       |                         |    |     |    |                         |    |    |   |  |  |  |       |  |  |  |    |  |  |  |    |
| 2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 0.3                |                                                                                                                                        | 10,048                                            | 0.291                                                                             |                   |                                                                 |                                                   |                                                                                   |      |       |       |       |       |        |      |        |       |       |     |       |       |        |   |   |       |        |   |  |              |        |  |  |          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |  |                               |  |  |  |  |                    |                     |       |                         |    |     |    |                         |    |    |   |  |  |  |       |  |  |  |    |  |  |  |    |
| 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 0.2                |                                                                                                                                        | 9,220                                             | 0.211                                                                             |                   |                                                                 |                                                   |                                                                                   |      |       |       |       |       |        |      |        |       |       |     |       |       |        |   |   |       |        |   |  |              |        |  |  |          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |  |                               |  |  |  |  |                    |                     |       |                         |    |     |    |                         |    |    |   |  |  |  |       |  |  |  |    |  |  |  |    |
| 4                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 0                  |                                                                                                                                        | 0                                                 | 0.000                                                                             |                   |                                                                 |                                                   |                                                                                   |      |       |       |       |       |        |      |        |       |       |     |       |       |        |   |   |       |        |   |  |              |        |  |  |          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |  |                               |  |  |  |  |                    |                     |       |                         |    |     |    |                         |    |    |   |  |  |  |       |  |  |  |    |  |  |  |    |
| 5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 0                  |                                                                                                                                        | 0                                                 | 0.000                                                                             |                   |                                                                 |                                                   |                                                                                   |      |       |       |       |       |        |      |        |       |       |     |       |       |        |   |   |       |        |   |  |              |        |  |  |          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |  |                               |  |  |  |  |                    |                     |       |                         |    |     |    |                         |    |    |   |  |  |  |       |  |  |  |    |  |  |  |    |

**HEAT LOSS AND GAIN SUMMARY SHEET****MODEL:** 2011**BUILDER:** ROYAL PINE HOMES**SFQT:** 1792**LO#** 87544**SITE:** CENTREFIELD (WEST GORMLEY)**DESIGN ASSUMPTIONS**

|                      |    |                                |    |
|----------------------|----|--------------------------------|----|
| HEATING              | °F | COOLING                        | °F |
| OUTDOOR DESIGN TEMP. | -6 | OUTDOOR DESIGN TEMP.           | 88 |
| INDOOR DESIGN TEMP.  | 72 | INDOOR DESIGN TEMP. (MAX 75°F) | 75 |

**BUILDING DATA**

|                                                  |                 |                           |          |
|--------------------------------------------------|-----------------|---------------------------|----------|
| ATTACHMENT:                                      | ATTACHED        | # OF STORIES (+BASEMENT): | 3        |
| FRONT FACES:                                     | EAST            | ASSUMED (Y/N):            | Y        |
| AIR CHANGES PER HOUR:                            | 3.00            | ASSUMED (Y/N):            | Y        |
| AIR TIGHTNESS CATEGORY:                          | TIGHT           | ASSUMED (Y/N):            | Y        |
| WIND EXPOSURE:                                   | SHELTERED       | ASSUMED (Y/N):            | Y        |
| HOUSE VOLUME (ft <sup>3</sup> ):                 | 24730.0         | ASSUMED (Y/N):            | Y        |
| INTERNAL SHADING:                                | BLINDS/CURTAINS | ASSUMED OCCUPANTS:        | 4        |
| INTERIOR LIGHTING LOAD (Btu/h/ft <sup>2</sup> ): | 1.45            | DC BRUSHLESS MOTOR (Y/N): | Y        |
| FOUNDATION CONFIGURATION                         | BCIN_1          | DEPTH BELOW GRADE:        | 7.0 ft   |
| LENGTH: 51.0 ft                                  | WIDTH: 22.0 ft  | EXPOSED PERIMETER:        | 125.0 ft |

**2012 OBC - COMPLIANCE PACKAGE****Component****Compliance Package  
SB-12 PERFORMANCE****Nominal Min. Eff.**

|                                                                            |        |       |
|----------------------------------------------------------------------------|--------|-------|
| Ceiling with Attic Space Minimum RSI (R)-Value                             | 60     | 59.20 |
| Ceiling Without Attic Space Minimum RSI (R)-Value                          | 31     | 27.70 |
| Exposed Floor Minimum RSI (R)-Value                                        | 31     | 29.80 |
| Walls Above Grade Minimum RSI (R)-Value                                    | 22+1.5 | 18.50 |
| Basement Walls Minimum RSI (R)-Value                                       | 20     | 21.12 |
| Below Grade Slab Entire surface > 600 mm below grade Minimum RSI (R)-Value | -      | -     |
| Edge of Below Grade Slab ≤ 600 mm Below Grade Minimum RSI (R)-Value        | 10     | 10    |
| Heated Slab or Slab ≤ 600 mm below grade Minimum RSI (R)-Value             | 10     | 11.13 |
| Windows and Sliding Glass Doors Maximum U-Value                            | 1.6    | -     |
| Skylights Maximum U-Value                                                  | 2.6    | -     |
| Space Heating Equipment Minimum AFUE                                       | 0.96   | -     |
| HRV Minimum Efficiency                                                     | 75%    | -     |
| Domestic Hot Water Heater Minimum EF                                       | TE=94% | -     |

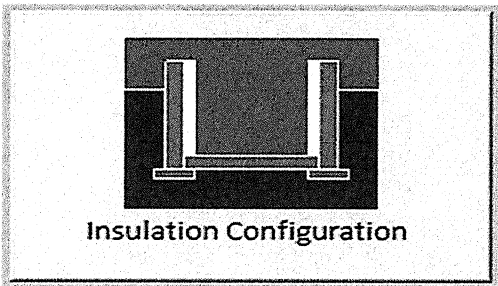
INDIVIDUAL BCIN: 19669

MICHAEL O'ROURKE

*Michael O'Rourke*

## Residential Foundation Thermal Load Calculator

Supplemental tool for CAN/CSA-F280

| Weather Station Description    |                                           |                                                                                                                 |
|--------------------------------|-------------------------------------------|-----------------------------------------------------------------------------------------------------------------|
| Province:                      | Ontario                                   |                                                                                                                 |
| Region:                        | Richmond Hill                             |                                                                                                                 |
| Site Description               |                                           |                                                                                                                 |
| Soil Conductivity:             | Normal conductivity: dry sand, loam, clay |                                                                                                                 |
| Water Table:                   | Normal (7-10 m, 23-33 ft)                 |                                                                                                                 |
| Foundation Dimensions          |                                           |                                                                                                                 |
| Floor Length (m):              | 15.5                                      | <br>Insulation Configuration |
| Floor Width (m):               | 6.7                                       |                                                                                                                 |
| Exposed Perimeter (m):         | 38.1                                      |                                                                                                                 |
| Wall Height (m):               | 3.0                                       |                                                                                                                 |
| Depth Below Grade (m):         | 2.13                                      |                                                                                                                 |
| Window Area (m <sup>2</sup> ): | 1.1                                       |                                                                                                                 |
| Door Area (m <sup>2</sup> ):   | 1.9                                       |                                                                                                                 |
| Radiant Slab                   |                                           |                                                                                                                 |
| Heated Fraction of the Slab:   | 0                                         |                                                                                                                 |
| Fluid Temperature (°C):        | 33                                        |                                                                                                                 |
| Design Months                  |                                           |                                                                                                                 |
| Heating Month                  | 1                                         |                                                                                                                 |
| Foundation Loads               |                                           |                                                                                                                 |
| Heating Load (Watts):          |                                           | 1200                                                                                                            |

TYPE: 2011  
LO# 87544

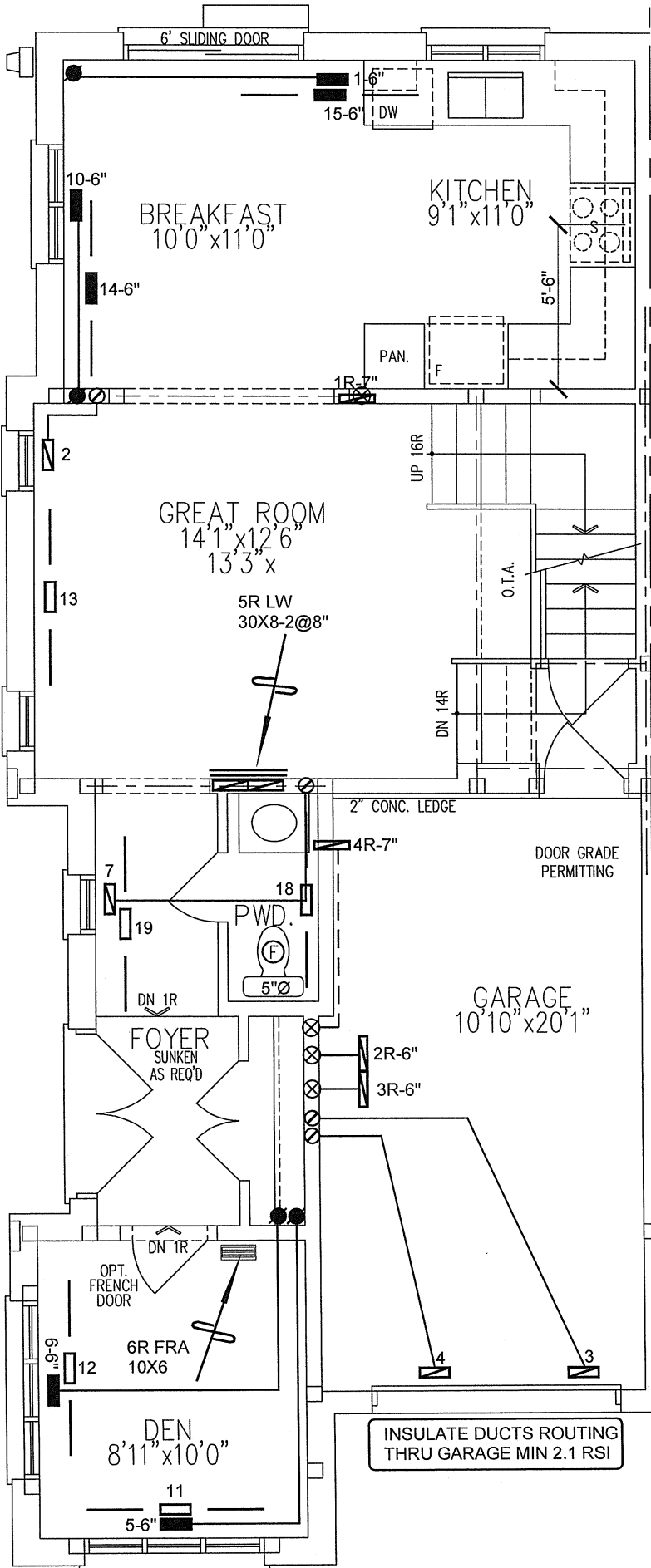
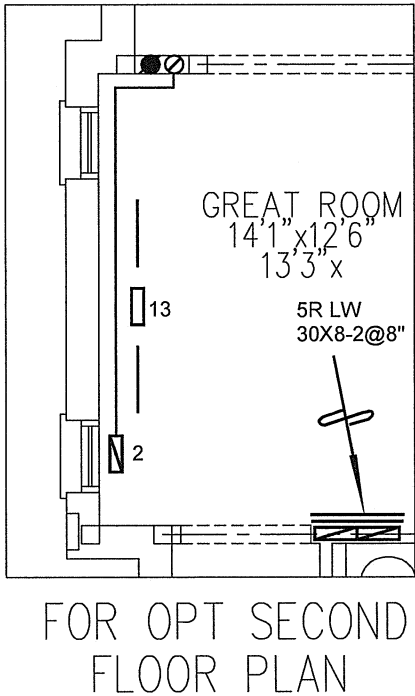
## Air Infiltration Residential Load Calculator

Supplemental tool for CAN/CSA-F280

| Weather Station Description       |                                |                       |    |    |
|-----------------------------------|--------------------------------|-----------------------|----|----|
| Province:                         | Ontario                        |                       |    |    |
| Region:                           | Richmond Hill                  |                       |    |    |
| 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            |                                |                       |    |    |
| Type:                             | Semi                           |                       |    |    |
| Number of Stories:                | Two                            |                       |    |    |
| Foundation:                       | Full                           |                       |    |    |
| House Volume (m <sup>3</sup> ):   | 700.3                          |                       |    |    |
| Air Leakage/Ventilation           |                                |                       |    |    |
| Air Tightness Type:               | Energy Star Attached (3.0 ACH) |                       |    |    |
| Custom BDT Data:                  | ELA @ 10 Pa.                   | 784.4 cm <sup>2</sup> |    |    |
|                                   | 3.00                           | ACH @ 50 Pa           |    |    |
| Mechanical Ventilation (L/s):     | Total Supply                   | Total Exhaust         |    |    |
|                                   | 30.0                           | 30.0                  |    |    |
| Flue Size                         |                                |                       |    |    |
| Flue #:                           | #1                             | #2                    | #3 | #4 |
| Diameter (mm):                    | 0                              | 0                     | 0  | 0  |
| Natural Infiltration Rates        |                                |                       |    |    |
| Heating Air Leakage Rate (ACH/H): | 0.283                          |                       |    |    |
| Cooling Air Leakage Rate (ACH/H): | 0.086                          |                       |    |    |



PARTIAL GROUND FLOOR PLAN, EL. 'B' MOD



GROUND FLOOR PLAN, EL. 'A'

GROUND FLOOR PLAN, EL. 'B'

I MICHAEL O'ROURKE HAVE REVIEWED AND TAKE RESPONSIBILITY FOR THE DESIGN WORK AND AM QUALIFIED UNDER DIVISION C, 3.2.5 OF THE BUILDING CODE.

Michael O'Rourke, BCIN# 19669  
HVAC DESIGNS LTD.

CSA-F280-12

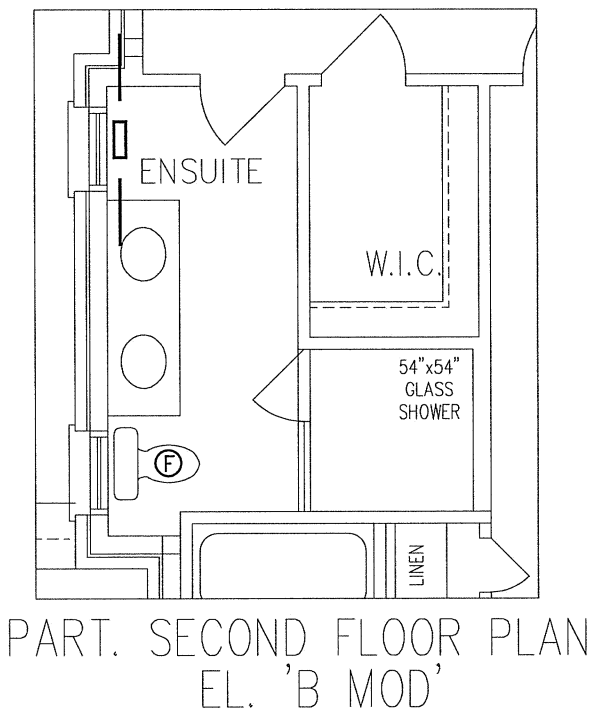
SB-12 PERFORMANCE

| HVAC LEGEND |                           |        |                                 |        |                              |        |                            | 3.        | REVISED ACH                   | SEPT/2021 |
|-------------|---------------------------|--------|---------------------------------|--------|------------------------------|--------|----------------------------|-----------|-------------------------------|-----------|
| SYMBOL      | DESCRIPTION               | SYMBOL | DESCRIPTION                     | SYMBOL | DESCRIPTION                  | SYMBOL | DESCRIPTION                | 2.        | REVISED AS PER ARCHITECTURALS | APR/2021  |
|             | SUPPLY AIR GRILLE         |        | 6" SUPPLY AIR BOOT ABOVE        |        | 14"x8" RETURN AIR GRILLE     |        | RETURN AIR STACK ABOVE     | 1.        | REVISED TO PERFORMANCE        | SEPT/2020 |
|             | SUPPLY AIR GRILLE 6" BOOT |        | SUPPLY AIR STACK FROM 2nd FLOOR |        | 30"x8" RETURN AIR GRILLE     |        | RETURN AIR STACK 2nd FLOOR | No.       | Description                   | Date      |
|             | SUPPLY AIR BOOT ABOVE     |        | 6" SUPPLY AIR STACK 2nd FLOOR   |        | FRA- FLOOR RETURN AIR GRILLE |        | REDUCER                    | REVISIONS |                               |           |

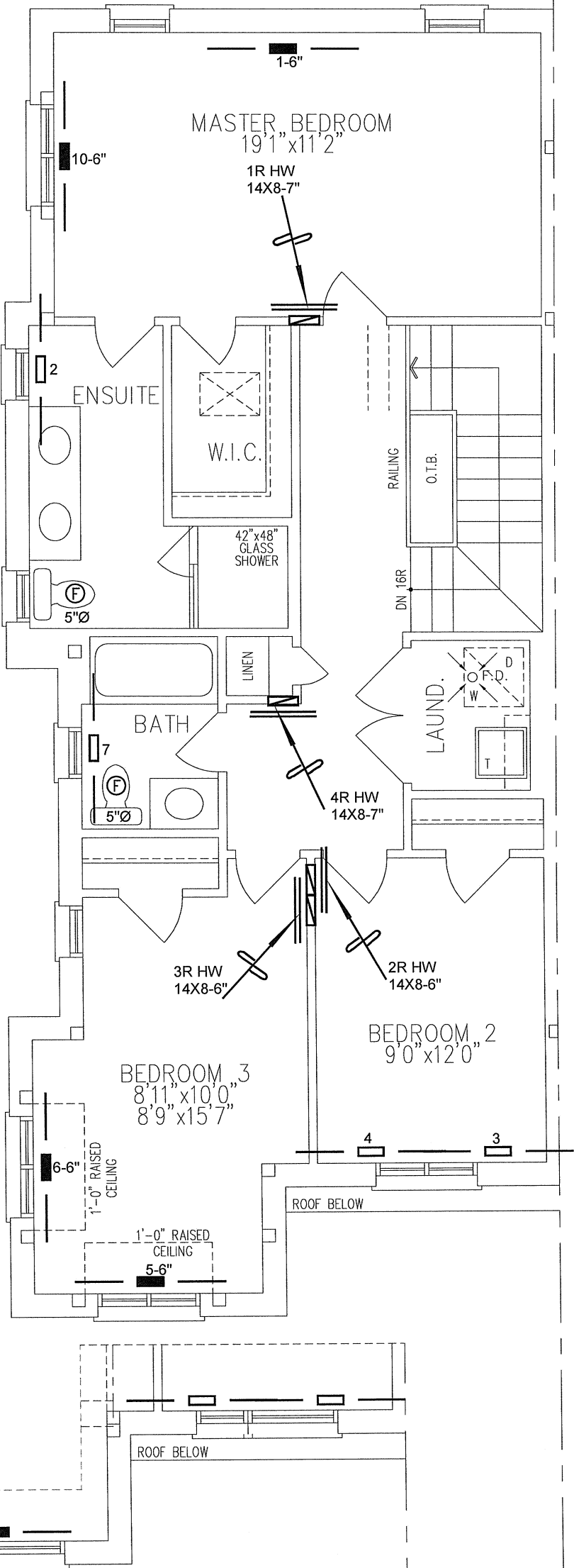
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|                                                      |           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                  |               |
|------------------------------------------------------|-----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------|---------------|
| Client                                               |           | <div></div> <div>375 Finley Ave. Suite 202 - Ajax, Ontario<br/>L1S 2E2 Tel. 905.619.2300 - 905.420.5300 Fax 905.619.2375<br/>Email: info@hvacdesigns.ca<br/>Web: www.hvacdesigns.ca<br/>Specializing in Residential Mechanical Design Services</div> <div>Installation to comply with the latest Ontario Building Code. All supply branch outlets shall be equipped with a manual balancing damper.<br/>Ductwork which passes through the garage or unheated spaces shall be adequately insulated and be gas-proofed.</div> | Sheet Title                      |               |
| ROYAL PINE HOMES                                     |           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | FIRST FLOOR<br>HEATING<br>LAYOUT |               |
| Project Name                                         |           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Date                             | SEPT/2020     |
| CENTREFIELD (WEST GORMLEY)<br>RICHMOND HILL, ONTARIO |           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Scale                            | 3/16" = 1'-0" |
|                                                      |           | BCIN# 19669                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                  |               |
| 2011                                                 | 1792 sqft | LO# 87544                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                  |               |

PARTIAL SECOND FLOOR PLAN, EL. 'B'-MOD.



SECOND FLOOR PLAN, EL. 'A'



SECOND FLOOR PLAN, EL. 'B'

I MICHAEL O'ROURKE HAVE REVIEWED AND TAKE RESPONSIBILITY FOR THE DESIGN WORK AND AM QUALIFIED UNDER DIVISION C. 3.2.5 OF THE BUILDING CODE.  
*Michael O'Rourke*  
Michael O'Rourke, BCIN# 19669  
HVAC DESIGNS LTD.

CSA-F280-12

SB-12 PERFORMANCE

| HVAC LEGEND |                           |        |                                 |        |                              |        |                            | 3.        | REVISED ACH                   | SEPT/2021 |
|-------------|---------------------------|--------|---------------------------------|--------|------------------------------|--------|----------------------------|-----------|-------------------------------|-----------|
| SYMBOL      | DESCRIPTION               | SYMBOL | DESCRIPTION                     | SYMBOL | DESCRIPTION                  | SYMBOL | DESCRIPTION                | 2.        | REVISED AS PER ARCHITECTURALS | APR/2021  |
|             | SUPPLY AIR GRILLE         |        | 6" SUPPLY AIR BOOT ABOVE        |        | 14"x8" RETURN AIR GRILLE     |        | RETURN AIR STACK ABOVE     | 1.        | REVISED TO PERFORMANCE        | SEPT/2020 |
|             | SUPPLY AIR GRILLE 6" BOOT |        | SUPPLY AIR STACK FROM 2nd FLOOR |        | 30"x8" RETURN AIR GRILLE     |        | RETURN AIR STACK 2nd FLOOR | No.       | Description                   | Date      |
|             | SUPPLY AIR BOOT ABOVE     |        | 6" SUPPLY AIR STACK 2nd FLOOR   |        | FRA- FLOOR RETURN AIR GRILLE |        | REDUCER                    | REVISIONS |                               |           |

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|                                                      |           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                             |               |
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| ROYAL PINE HOMES                                     |           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | SECOND FLOOR HEATING LAYOUT |               |
| Project Name                                         |           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Date                        | SEPT/2020     |
| CENTREFIELD (WEST GORMLEY)<br>RICHMOND HILL, ONTARIO |           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Scale                       | 3/16" = 1'-0" |
|                                                      |           | BCIN# 19669                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                             |               |
| 2011                                                 | 1792 sqft | LO#                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 87544                       |               |