# Schedule 1: Designer Information

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

**A. Project Information**

| Building number, street name | | | Unit no. | Lot/con. |
|---|---|---|---|---|
| | | | | |
| **Municipality** | **Postal code** | **Plan number/ other description** | | |
| RICHMOND HILL | | | | |

**B. Individual who reviews and takes responsibility for design activities**

| Name | | Firm | | |
|---|---|---|---|---|
| **MICHAEL O'ROURKE** | | **HVAC DESIGNS LTD.** | | |
| **Street address** | | | **Unit no.** | **Lot/con.** |
| **375 FINLEY AVE** | | | **202** | **N/A** |
| **Municipality** | **Postal code** | **Province** | **E-mail** | |
| **AJAX** | **L1S 2E2** | **ONTARIO** | **info@hvacdesigns.ca** | |
| **Telephone number** | **Fax number** | | **Cell number** | |
| **(905) 619-2300** | **(905) 619-2375** | | ( ) | |

**C. Design activities undertaken by individual identified in Section B. [Building Code Table 3.5.2.1 OF Division C]**

| | | |
|---|---|---|
| ☐ House | ☒ HVAC – House | ☐ Building Structural |
| ☐ Small Buildings | ☐ Building Services | ☐ Plumbing – House |
| ☐ Large Buildings | ☐ Detection, Lighting and Power | ☐ Plumbing – All Buildings |
| ☐ Complex Buildings | ☐ Fire Protection | ☐ On-site Sewage Systems |

| Description of designer's work | |
|---|---|
| **HEAT LOSS / GAIN CALCULATIONS**<br>**DUCT SIZING**<br>**RESIDENTIAL MECHANICAL VENTILATION DESIGN SUMMARY**<br>**RESIDENTIAL SYSTEM DESIGN per CSA-F280-12** | **Model:** 4504<br><br>**Project:** CENTREFIELD (WEST GORMLEY) |

**D. Declaration of Designer**

I **MICHAEL O'ROURKE** declare that (choose one as appropriate):
(print name)

☐ 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.

Individual BCIN: _____
Firm BCIN: _____

☒ 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 Di vision C, of the Building Code.

Individual BCIN: 19669
Basis for exemption from registration and qualification: O.B.C SENTENCE 3.2.4.1 (4)

☐ The design work is exempt from the registration and qualification requirements of the Building Code.
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.
2. I have submitted this application with the knowledge and consent of the firm.

June 7, 2021
Date

Signature of Designer

NOTE:

1. 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.
2. 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.

HVAC DESIGNS LTD.

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Tel: 905.619.2300 Fax: 905.619.2375
Web: www.hvacdesigns.ca E-mail: info@hvacdesigns.ca

SITE NAME: CENTREFIELD (WEST GORMLEY) | DATE: Jun-21 | WINTER NATURAL AIR CHANGE RATE 0.219 | HEAT LOSS ΔT °F. 78 | CSA-F280-12
BUILDER: ROYAL PINE HOMES | TYPE: 4504 | GFA: 3223 | LO# 87511 | SUMMER NATURAL AIR CHANGE RATE 0.068 | HEAT GAIN ΔT °F. 13 | SB-12 PERFORMANCE

| ROOM USE | | | MBR | | | ENS | | | | BED-2 | | | BED-3 | | | BED-4 | | | BATH | | | | | ENS-2 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| EXP. WALL | | | 42 | | | 26 | | | | 35 | | | 48 | | | 17 | | | 7 | | | | | 9 | | | | | |
| CLG. HT. | | | 9 | | | 8 | | | | 8 | | | 8 | | | 8 | | | 8 | | | | | 8 | | | | | |
| | FACTORS | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| GRS.WALL AREA | LOSS | GAIN | 378 | | | 208 | | | | 280 | | | 384 | | | 136 | | | 56 | | | | | 72 | | | | | |
| GLAZING | | | | LOSS | GAIN | | LOSS | GAIN | | | LOSS | GAIN | | LOSS | GAIN | | 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 | | | 7 | 152 | 112 | | | |
| EAST | 21.8 | 41.6 | 0 | 0 | 0 | 0 | 0 | 0 | | 67 | 1460 | 2784 | 64 | 1394 | 2659 | 0 | 0 | 0 | 0 | 0 | 0 | | | 0 | 0 | 0 | | | |
| SOUTH | 21.8 | 24.9 | 0 | 0 | 0 | 8 | 174 | 199 | | 0 | 0 | 0 | 0 | 0 | 0 | 16 | 349 | 398 | 7 | 152 | 174 | | | 0 | 0 | 0 | | | |
| WEST | 21.8 | 41.6 | 36 | 784 | 1496 | 18 | 392 | 748 | | 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 | 0 | | | |
| DOORS | 25.8 | 4.3 | 0 | 0 | 0 | 0 | 0 | 0 | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | 0 | 0 | 0 | | | |
| NET EXPOSED WALL | 4.2 | 0.7 | 342 | 1438 | 237 | 182 | 765 | 126 | | 213 | 896 | 147 | 320 | 1346 | 221 | 120 | 505 | 83 | 49 | 206 | 34 | | | 65 | 273 | 45 | | | |
| 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 | 0 | | | |
| EXPOSED CLG | 1.3 | 0.6 | 428 | 562 | 252 | 164 | 216 | 96 | | 280 | 368 | 165 | 274 | 360 | 161 | 250 | 329 | 147 | 96 | 126 | 56 | | | 102 | 134 | 60 | | | |
| NO ATTIC EXPOSED CLG | 2.8 | 1.3 | 0 | 0 | 0 | 0 | 0 | 0 | | 0 | 0 | 0 | 30 | 84 | 38 | 40 | 112 | 50 | 0 | 0 | 0 | | | 0 | 0 | 0 | | | |
| EXPOSED FLOOR | 2.6 | 0.4 | 0 | 0 | 0 | 0 | 0 | 0 | | 280 | 731 | 120 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | 5 | 13 | 2 | | | |
| BASEMENT/CRAWL HEAT LOSS | | | | 0 | | | 0 | | | | 0 | | | 0 | | | 0 | | | 0 | | | | | 0 | | | | |
| SLAB ON GRADE HEAT LOSS | | | | 0 | | | 0 | | | | 0 | | | 0 | | | 0 | | | 0 | | | | | 0 | | | | |
| SUBTOTAL HT LOSS | | | | 2785 | | | 1547 | | | | 3454 | | | 3184 | | | 1294 | | | 485 | | | | | 573 | | | | |
| SUB TOTAL HT GAIN | | | | | 1984 | | | 1169 | | | | 3216 | | | 3079 | | | 679 | | | 265 | | | | | 219 | | | |
| LEVEL FACTOR / MULTIPLIER | | | 0.20 | 0.19 | | 0.20 | 0.19 | | | 0.20 | 0.19 | | 0.20 | 0.19 | | 0.20 | 0.19 | | 0.20 | 0.19 | | | | 0.20 | 0.19 | | | | |
| AIR CHANGE HEAT LOSS | | | | 522 | | | 290 | | | | 648 | | | 597 | | | 243 | | | 91 | | | | | 107 | | | | |
| AIR CHANGE HEAT GAIN | | | | | 82 | | | 49 | | | | 133 | | | 128 | | | 28 | | | 11 | | | | | 9 | | | |
| DUCT LOSS | | | | 0 | | | 0 | | | | 410 | | | 0 | | | 0 | | | 0 | | | | | 68 | | | | |
| DUCT GAIN | | | | | 0 | | | 0 | | | | 424 | | | 0 | | | 0 | | | 0 | | | | | 23 | | | |
| HEAT GAIN PEOPLE | 240 | | 2 | | 480 | 0 | | 0 | | 1 | | 240 | 1 | | 240 | 1 | | 240 | 0 | | 0 | | | 0 | | 0 | | | |
| HEAT GAIN APPLIANCES/LIGHTS | | | | | 655 | | | 0 | | | | 655 | | | 655 | | | 655 | | | 0 | | | | | 0 | | | |
| TOTAL HT LOSS BTU/H | | | | 3307 | | | 1838 | | | | 4512 | | | 3782 | | | 1537 | | | 576 | | | | | 748 | | | | |
| TOTAL HT GAIN x 1.3 BTU/H | | | | | 4161 | | | 1583 | | | | 6069 | | | 5333 | | | 2082 | | | 358 | | | | | 326 | | | |

| ROOM USE | | | LIV | | | DIN | | | KT/GT | | | DEN | | | LAUN | | | W/R | | | FOY | | | MUD | | | | | | BAS | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| EXP. WALL | | | 25 | | | 25 | | | 63 | | | 23 | | | 0 | | | 6 | | | 23 | | | 22 | | | | | | 188 | | |
| CLG. HT. | | | 10 | | | 10 | | | 10 | | | 10 | | | 8 | | | 10 | | | 10 | | | 11 | | | | | | 9 | | |
| | FACTORS | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| GRS.WALL AREA | LOSS | GAIN | 250 | | | 250 | | | 630 | | | 230 | | | 0 | | | 60 | | | 230 | | | 242 | | | | | | 1128 | | |
| GLAZING | | | | LOSS | GAIN | | LOSS | GAIN | | LOSS | GAIN | | LOSS | GAIN | | LOSS | GAIN | | LOSS | GAIN | | 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 | 0 | 0 | 0 | 0 | | | | 4 | 87 | 64 |
| EAST | 21.8 | 41.6 | 40 | 871 | 1662 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 27 | 588 | 1122 | 0 | 0 | 0 | | | | 0 | 0 | 0 |
| SOUTH | 21.8 | 24.9 | 0 | 0 | 0 | 28 | 610 | 697 | 16 | 349 | 398 | 0 | 0 | 0 | 0 | 0 | 0 | 9 | 196 | 224 | 0 | 0 | 0 | 0 | 0 | 0 | | | | 8 | 174 | 199 |
| WEST | 21.8 | 41.6 | 0 | 0 | 0 | 0 | 0 | 0 | 103 | 2244 | 4280 | 23 | 501 | 956 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | | 8 | 174 | 332 |
| 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 | 0 | 0 | 0 | 0 | | | | 0 | 0 | 0 |
| DOORS | 25.8 | 4.3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 20 | 517 | 85 | 20 | 517 | 85 | | | | 20 | 517 | 85 |
| NET EXPOSED WALL | 4.2 | 0.7 | 210 | 883 | 145 | 222 | 934 | 154 | 511 | 2149 | 354 | 207 | 871 | 143 | 0 | 0 | 0 | 51 | 214 | 35 | 183 | 770 | 127 | 222 | 934 | 154 | | | | 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 | 0 | 0 | 0 | 0 | | | | 564 | 2078 | 342 |
| EXPOSED CLG | 1.3 | 0.6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 106 | 139 | 62 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | | 0 | 0 | 0 |
| 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 | 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 | 38 | 99 | 16 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | | 0 | 0 | 0 |
| BASEMENT/CRAWL HEAT LOSS | | | | 0 | | | 0 | | | 0 | | | 0 | | | 0 | | | 0 | | | 0 | | | 0 | | | | | 6474 | | |
| SLAB ON GRADE HEAT LOSS | | | | 0 | | | 0 | | | 0 | | | 0 | | | 0 | | | 0 | | | 0 | | | 0 | | | | | | | |
| SUBTOTAL HT LOSS | | | | 1754 | | | 1544 | | | 4741 | | | 1372 | | | 239 | | | 411 | | | 1875 | | | 1451 | | | | | 9505 | | |
| SUB TOTAL HT GAIN | | | | | 1807 | | | 851 | | | 5032 | | | 1099 | | | 79 | | | 259 | | | 1334 | | | 239 | | | | | | 1022 |
| LEVEL FACTOR / MULTIPLIER | | | 0.30 | 0.29 | | 0.30 | 0.29 | | 0.30 | 0.29 | | 0.30 | 0.29 | | 0.20 | 0.19 | | 0.30 | 0.29 | | 0.30 | 0.29 | | 0.30 | 0.29 | | | | | 0.50 | 0.67 | |
| AIR CHANGE HEAT LOSS | | | | 509 | | | 448 | | | 1376 | | | 398 | | | 45 | | | 119 | | | 544 | | | 421 | | | | | 6359 | | |
| AIR CHANGE HEAT GAIN | | | | | 75 | | | 35 | | | 209 | | | 46 | | | 3 | | | 11 | | | 55 | | | 10 | | | | | | 42 |
| DUCT LOSS | | | | 0 | | | 0 | | | 0 | | | 0 | | | 28 | | | 0 | | | 0 | | | 0 | | | | | 0 | | |
| DUCT GAIN | | | | | 0 | | | 0 | | | 0 | | | 0 | | | 74 | | | 0 | | | 0 | | | 0 | | | | | | 0 |
| HEAT GAIN PEOPLE | 240 | | 0 | | 0 | 0 | | 0 | 0 | | 0 | 0 | | 0 | 0 | | 0 | 0 | | 0 | 0 | | 0 | 0 | | 0 | | | | 0 | | 0 |
| HEAT GAIN APPLIANCES/LIGHTS | | | | | 655 | | | 655 | | | 655 | | | 655 | | | 655 | | | 0 | | | 0 | | | 0 | | | | | | 655 |
| TOTAL HT LOSS BTU/H | | | | 2264 | | | 1992 | | | 6117 | | | 1770 | | | 312 | | | 530 | | | 2419 | | | 1872 | | | | | 15864 | | |
| TOTAL HT GAIN x 1.3 BTU/H | | | | | 3298 | | | 2003 | | | 7664 | | | 2339 | | | 1053 | | | 351 | | | 1806 | | | 323 | | | | | | 2235 |

TOTAL HEAT GAIN BTU/H: 41260 | TONS: 3.44 | LOSS DUE TO VENTILATION LOAD BTU/H: 1670 | STRUCTURAL HEAT LOSS: 49437 | TOTAL COMBINED HEAT LOSS BTU/H: 51107

I REVIEW AND TAKE RESPONSIBILITY FOR THE DESIGN WORK AND AM QUALIFIED IN THE APPROPRIATE CATEGORY AS AN "OTHER DESIGNER" UNDER DIVISION C, 3.2.5 OF THE BUILDING CODE.

INDIVIDUAL BCIN: 19669 MICHAEL O'ROURKE

HVAC DESIGNS LTD.

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Tel: 905.619.2300 Fax: 905.619.2375
Web: www.hvacdesigns.ca E-mail: info@hvacdesigns.ca

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

TYPE: 4504 DATE: Jun-21 GFA: 3223 LO# 87511

| | | | |
|---|---|---|---|
| HEATING CFM | 1370 | COOLING CFM | 1370 |
| TOTAL HEAT LOSS | 49,437 | TOTAL HEAT GAIN | 40,985 |
| AIR FLOW RATE CFM | 27.71 | AIR FLOW RATE CFM | 33.43 |

| | |
|---|---|
| furnace pressure | 0.6 |
| furnace filter | 0.05 |
| a/c coil pressure | 0.2 |
| available pressure for s/a & r/a | 0.35 |
| plenum pressure s/a | 0.18 |
| max s/a dif press. loss | 0.02 |
| min adjusted pressure s/a | 0.16 |
| r/a pressure | 0.17 |
| r/a grille press. Loss | 0.02 |
| adjusted pressure r/a | 0.15 |

**CARRIER
59TN6A-060-14V 60

| FAN SPEED | |
|---|---|
| LOW | 820 |
| MEDLOW | 0 |
| MEDIUM | 0 |
| MEDIUM HIGH | 1370 |
| HIGH | 1520 |

AFUE = 97 %
INPUT (BTU/H) = 60,000
OUTPUT (BTU/H) = 58,000
DESIGN CFM = 1370
CFM @ .6 " E.S.P.
TEMPERATURE RISE 39 °F

| RUN COUNT | 4th | 3rd | 2nd | 1st | Bas |
|---|---|---|---|---|---|
| S/A | 0 | 0 | 12 | 10 | 5 |
| R/A | 0 | 0 | 5 | 3 | 1 |

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 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ROOM NAME | MBR | ENS | ENS | BED-2 | BED-3 | BED-4 | BATH | BED-2 | BED-3 | MBR | ENS-2 | LIV | LIV | KT/GT | KT/GT | KT/GT | LAUN | W/R | FOY | MUD | BAS | BAS | BAS | BAS |
| RM LOSS MBH. | 1.65 | 0.92 | 0.92 | 2.26 | 1.89 | 1.54 | 0.58 | 2.26 | 1.89 | 1.65 | 0.75 | 1.13 | 1.13 | 2.04 | 2.04 | 2.04 | 0.31 | 0.53 | 2.42 | 1.87 | 3.17 | 3.17 | 3.17 | 3.17 |
| CFM PER RUN HEAT | 46 | 25 | 25 | 63 | 52 | 43 | 16 | 63 | 52 | 46 | 21 | 31 | 31 | 57 | 57 | 57 | 9 | 15 | 67 | 52 | 88 | 88 | 88 | 88 |
| RM GAIN MBH. | 2.08 | 0.79 | 0.79 | 3.03 | 2.67 | 2.08 | 0.36 | 3.03 | 2.67 | 2.08 | 0.33 | 1.65 | 1.65 | 2.55 | 2.55 | 2.55 | 1.05 | 0.35 | 1.81 | 0.32 | 0.45 | 0.45 | 0.45 | 0.45 |
| CFM PER RUN COOLING | 70 | 26 | 26 | 101 | 89 | 70 | 12 | 101 | 89 | 70 | 11 | 55 | 55 | 85 | 85 | 85 | 35 | 12 | 60 | 11 | 15 | 15 | 15 | 15 |
| ADJUSTED PRESSURE | 0.17 | 0.17 | 0.17 | 0.16 | 0.16 | 0.17 | 0.17 | 0.16 | 0.16 | 0.17 | 0.17 | 0.17 | 0.17 | 0.16 | 0.16 | 0.16 | 0.17 | 0.17 | 0.17 | 0.17 | 0.16 | 0.16 | 0.16 | 0.16 |
| ACTUAL DUCT LGH. | 45 | 42 | 60 | 54 | 71 | 66 | 56 | 62 | 66 | 34 | 56 | 61 | 55 | 34 | 26 | 14 | 45 | 49 | 49 | 41 | 30 | 16 | 17 | 38 |
| EQUIVALENT LENGTH | 150 | 180 | 180 | 120 | 170 | 170 | 170 | 140 | 150 | 160 | 170 | 170 | 170 | 120 | 140 | 110 | 130 | 120 | 160 | 190 | 90 | 120 | 120 | 110 |
| TOTAL EFFECTIVE LENGTH | 195 | 222 | 240 | 174 | 241 | 236 | 226 | 202 | 216 | 194 | 226 | 231 | 225 | 154 | 166 | 124 | 175 | 169 | 209 | 231 | 120 | 136 | 137 | 148 |
| ADJUSTED PRESSURE | 0.09 | 0.08 | 0.07 | 0.09 | 0.07 | 0.07 | 0.08 | 0.08 | 0.08 | 0.09 | 0.08 | 0.07 | 0.08 | 0.11 | 0.1 | 0.13 | 0.1 | 0.1 | 0.08 | 0.07 | 0.14 | 0.12 | 0.12 | 0.11 |
| ROUND DUCT SIZE | 5 | 4 | 4 | **6** | **6** | **6** | 4 | **6** | **6** | 5 | 4 | 5 | 5 | **6** | **6** | **6** | 4 | 4 | 5 | 5 | **6** | **6** | **6** | **6** |
| HEATING VELOCITY (ft/min) | 338 | 287 | 287 | 321 | 265 | 219 | 184 | 321 | 265 | 338 | 241 | 228 | 228 | 291 | 291 | 291 | 103 | 172 | 492 | 382 | 449 | 449 | 449 | 449 |
| COOLING VELOCITY (ft/min) | 514 | 298 | 298 | 515 | 454 | 357 | 138 | 515 | 454 | 514 | 126 | 404 | 404 | 433 | 433 | 433 | 402 | 138 | 441 | 81 | 76 | 76 | 76 | 76 |
| OUTLET GRILL SIZE | 3X10 | 3X10 | 3X10 | 4X10 | 4X10 | 4X10 | 3X10 | 4X10 | 4X10 | 3X10 | 3X10 | 3X10 | 3X10 | 4X10 | 4X10 | 4X10 | 3X10 | 3X10 | 3X10 | 3X10 | 4X10 | 4X10 | 4X10 | 4X10 |
| TRUNK | D | D | D | C | A | B | B | C | A | E | C | A | A | E | D | D | C | B | A | C | E | E | C | B |

| RUN # | 25 | 26 | 27 |
|---|---|---|---|
| ROOM NAME | BAS | DIN | DEN |
| RM LOSS MBH. | 3.17 | 1.99 | 1.77 |
| CFM PER RUN HEAT | 88 | 55 | 49 |
| RM GAIN MBH. | 0.45 | 2.00 | 2.34 |
| CFM PER RUN COOLING | 15 | 67 | 78 |
| ADJUSTED PRESSURE | 0.16 | 0.17 | 0.17 |
| ACTUAL DUCT LGH. | 47 | 39 | 22 |
| EQUIVALENT LENGTH | 150 | 140 | 150 |
| TOTAL EFFECTIVE LENGTH | 197 | 179 | 172 |
| ADJUSTED PRESSURE | 0.08 | 0.1 | 0.1 |
| ROUND DUCT SIZE | **6** | **6** | 5 |
| HEATING VELOCITY (ft/min) | 449 | 280 | 360 |
| COOLING VELOCITY (ft/min) | 76 | 342 | 573 |
| OUTLET GRILL SIZE | 4X10 | 4X10 | 3X10 |
| TRUNK | A | B | E |

**SUPPLY AIR TRUNK SIZE**

| | TRUNK CFM | STATIC PRESS. | ROUND DUCT | RECT DUCT | | | VELOCITY (ft/min) | | TRUNK CFM | STATIC PRESS. | ROUND DUCT | RECT DUCT | | | VELOCITY (ft/min) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| TRUNK A | 321 | 0.07 | 9.5 | 12 | x | 8 | 482 | TRUNK G | 0 | 0.00 | 0 | 0 | x | 8 | 0 |
| TRUNK B | 538 | 0.07 | 11.5 | 16 | x | 8 | 605 | TRUNK H | 0 | 0.00 | 0 | 0 | x | 8 | 0 |
| TRUNK C | 834 | 0.07 | 13.5 | 20 | x | 10 | 600 | TRUNK I | 0 | 0.00 | 0 | 0 | x | 8 | 0 |
| TRUNK D | 210 | 0.07 | 8.1 | 10 | x | 8 | 378 | TRUNK J | 0 | 0.00 | 0 | 0 | x | 8 | 0 |
| TRUNK E | 538 | 0.07 | 11.5 | 16 | x | 8 | 605 | TRUNK K | 0 | 0.00 | 0 | 0 | x | 8 | 0 |
| TRUNK F | 0 | 0.00 | 0 | 0 | x | 8 | 0 | TRUNK L | 0 | 0.00 | 0 | 0 | x | 8 | 0 |

**RETURN AIR TRUNK SIZE**

| | TRUNK CFM | STATIC PRESS. | ROUND DUCT | RECT DUCT | | | VELOCITY (ft/min) |
|---|---|---|---|---|---|---|---|
| TRUNK O | 0 | 0.05 | 0 | 0 | x | 8 | 0 |
| TRUNK P | 0 | 0.05 | 0 | 0 | x | 8 | 0 |
| TRUNK Q | 0 | 0.05 | 0 | 0 | x | 8 | 0 |
| TRUNK R | 0 | 0.05 | 0 | 0 | x | 8 | 0 |
| TRUNK S | 0 | 0.05 | 0 | 0 | x | 8 | 0 |
| TRUNK T | 0 | 0.05 | 0 | 0 | x | 8 | 0 |
| TRUNK U | 0 | 0.05 | 0 | 0 | x | 8 | 0 |
| TRUNK V | 0 | 0.05 | 0 | 0 | x | 8 | 0 |
| TRUNK W | 245 | 0.05 | 9.3 | 10 | x | 8 | 441 |
| TRUNK X | 1230 | 0.05 | 17 | 26 | x | 10 | 681 |
| TRUNK Y | 1025 | 0.05 | 15.9 | 22 | x | 10 | 671 |
| TRUNK Z | 490 | 0.05 | 12.1 | 18 | x | 8 | 490 |
| DROP | 1370 | 0.05 | 17.7 | 24 | x | 12 | 685 |

| RETURN AIR # | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | | | | | | | | BR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| AIR VOLUME | 115 | 115 | 115 | 115 | 130 | 130 | 305 | 140 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 205 |
| PLENUM PRESSURE | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 |
| ACTUAL DUCT LGH. | 85 | 55 | 88 | 78 | 50 | 57 | 37 | 15 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 19 |
| EQUIVALENT LENGTH | 195 | 245 | 215 | 235 | 205 | 190 | 245 | 145 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 155 |
| TOTAL EFFECTIVE LH | 280 | 300 | 303 | 313 | 255 | 247 | 282 | 160 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 174 |
| ADJUSTED PRESSURE | 0.05 | 0.05 | 0.05 | 0.05 | 0.06 | 0.06 | 0.05 | 0.09 | 14.80 | 14.80 | 14.80 | 14.80 | 14.80 | 14.80 | 14.80 | 0.09 |
| ROUND DUCT SIZE | 7 | 7 | 7 | 7 | 7 | 7 | 10.1 | 6.5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 7.5 |
| INLET GRILL SIZE | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8 |
| | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X |
| INLET GRILL SIZE | 14 | 14 | 14 | 14 | 14 | 14 | 30 | 14 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 14 |

I REVIEW AND TAKE RESPONSIBILITY FOR THE DESIGN WORK AND AM QUALIFIED IN THE APPROPRIATE CATEGORY AS AN "OTHER DESIGNER" UNDER DIVISION C, 3.2.5 OF THE BUILDING CODE.

INDIVIDUAL BCIN: 19669 MICHAEL O'ROURKE

HVAC DESIGNS LTD.

375 Finley Ave. Suite 202 Ajax, ON L1S 2E2
Tel: 905.619.2300 Fax: 905.619.2375
Web: www.hvacdesigns.ca E-mail: info@hvacdesigns.ca

TYPE: 4504 LO # 87511
SITE NAME: CENTREFIELD (WEST GORMLEY)

# RESIDENTIAL MECHANICAL VENTILATION DESIGN SUMMARY

## COMBUSTION APPLIANCES 9.32.3.1(1)

a) [✓] Direct vent (sealed combustion) only
b) [ ] Positive venting induced draft (except fireplaces)
c) [ ] Natural draft, B-vent or induced draft gas fireplace
d) [ ] Solid Fuel (including fireplaces)
e) [ ] No Combustion Appliances

## HEATING SYSTEM

[✓] Forced Air [ ] Non Forced Air
[ ] Electric Space Heat

## HOUSE TYPE 9.32.1(2)

[✓] I Type a) or b) appliance only, no solid fuel
[ ] II Type I except with solid fuel (including fireplaces)
[ ] III Any Type c) appliance
[ ] IV Type I, or II with electric space heat
[ ] Other: Type I, II or IV no forced air

## SYSTEM DESIGN OPTIONS O.N.H.W.P.

[ ] 1 Exhaust only/Forced Air System
[ ] 2 HRV with Ducting/Forced Air System
[✓] 3 HRV Simplified/connected to forced air system
[ ] 4 HRV with Ducting/non forced air system
[ ] Part 6 Design

## TOTAL VENTILATION CAPACITY 9.32.3.3(1)

| | | | | |
|---|---|---|---|---|
| Basement + Master Bedroom | 2 | @ 21.2 cfm | 42.4 | cfm |
| Other Bedrooms | 3 | @ 10.6 cfm | 31.8 | cfm |
| Kitchen & Bathrooms | 5 | @ 10.6 cfm | 53 | cfm |
| Other Rooms | 6 | @ 10.6 cfm | 63.6 | cfm |
| Table 9.32.3.A. | | TOTAL | 190.8 | 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** | **79.5** | **cfm** |

## SUPPLEMENTAL VENTILATION CAPACITY 9.32.3.5.

| | | |
|---|---|---|
| Total Ventilation Capacity | 190.8 | cfm |
| Less Principal Ventil. Capacity | 79.5 | cfm |
| Required Supplemental Capacity | 111.3 | cfm |

## PRINCIPAL EXHAUST FAN CAPACITY

Model: VANEE 65H Location: BSMT

79.5 cfm [✓] HVI Approved

## PRINCIPAL EXHAUST HEAT LOSS CALCULATION

| CFM | | ΔT °F | | FACTOR | | % LOSS |
|---|---|---|---|---|---|---|
| 79.5 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 | ✓ | 3.5 |
| BATH | BY INSTALLING CONTRACTOR | 50 | ✓ | 3.5 |
| ENS-2 | BY INSTALLING CONTRACTOR | 50 | ✓ | 3.5 |
| W/R | BY INSTALLING CONTRACTOR | 50 | ✓ | 3.5 |

## HEAT RECOVERY VENTILATOR 9.32.3.11.

Model: VANEE 65H

155 cfm high 64 cfm low

75 % Sensible Efficiency @ 32 deg F ( 0 deg C) [✓] HVI Approved

## 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: Michael O'Rourke
HRAI # 001820
Date: June-21

I REVIEW AND TAKE RESPONIBILITY FOR THE DESIGN WORK AND AM QUALIFIED IN THE APPROPRIATE CATEGORY AS AN "OTHER DESIGNER" UNDER DIVISION C, 3.2.5 OF THE BUILDING CODE.

INDIVIDUAL BCIN: 19669 Michael O'Rourke MICHAEL O'ROURKE

HVAC DESIGNS LTD.

375 Finley Ave. Suite 202 Ajax, ON L1S 2E2
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# CSA F280-12 Residential Heat Loss and Heat Gain Calculations

## Formula Sheet (For Air Leakage / Ventiliation Calculation)

LO#: 87511 Model: 4504 Builder: ROYAL PINE HOMES Date: 6/7/2021

### Volume Calculation

**House Volume**

| Level | Floor Area ($ft^2$) | Floor Height (ft) | Volume ($ft^3$) |
|---|---|---|---|
| Bsmt | 1453 | 9 | 13077 |
| First | 1453 | 10 | 14530 |
| Second | 1770 | 8 | 14160 |
| Third | 0 | 9 | 0 |
| Fourth | 0 | 9 | 0 |
| | | Total: | 41,767.0 $ft^3$ |
| | | Total: | 1182.7 $m^3$ |

### Air Change & Delta T Data

| | |
|---|---|
| WINTER NATURAL AIR CHANGE RATE | 0.219 |
| SUMMER NATURAL AIR CHANGE RATE | 0.068 |

**Design Temperature Difference**

| | Tin °C | Tout °C | ΔT °C | ΔT °F |
|---|---|---|---|---|
| Winter DTDh | 22 | -21 | 43 | 78 |
| Summer DTDc | 24 | 31 | 7 | 13 |

### 5.2.3.1 Heat Loss due to Air Leakage

$$HL_{airb} = LR_{airh} \times \frac{V_b}{3.6} \times DTD_h \times 1.2$$

0.219 x 328.53 x 43 °C x 1.2 = 3727 W

= 12718 Btu/h

### 6.2.6 Sensible Gain due to Air Leakage

$$HG_{salb} = LR_{airc} \times \frac{V_b}{3.6} \times DTD_c \times 1.2$$

= 0.068 x 328.53 x 7 °C x 1.2 = 191 W

= 652 Btu/h

### 5.2.3.2 Heat Loss due to Mechanical Ventilation

$$HL_{vairb} = PVC \times DTD_h \times 1.08 \times (1 - E)$$

80 CFM x 78 °F x 1.08 x 0.25 = 1670 Btu/h

### 6.2.7 Sensible heat Gain due to Ventilation

$$HL_{vairb} = PVC \times DTD_h \times 1.08 \times (1 - E)$$

80 CFM x 13 °F x 1.08 x 0.25 = 275 Btu/h

### 5.2.3.3 Calculation of Air Change Heat Loss for Each Room (Floor Multiplier Section)

$$HL_{airr} = Level\ Factor \times HL_{airbv} \times \{(HL_{agcr} + HL_{bgcr}) \div (HL_{agclevel} + HL_{bgclevel})\}$$

| Level | Level Factor (LF) | HLairve Air Leakage + Ventilation Heat Loss (Btu/h) | Level Conductive Heat Loss: ($HL_{clevel}$) | Air Leakage Heat Loss Multiplier (LF x HLairbv / HLlevel) |
|---|---|---|---|---|
| 1 | 0.5 | 12,718 | 9,505 | 0.669 |
| 2 | 0.3 | | 13,147 | 0.290 |
| 3 | 0.2 | | 13,561 | 0.188 |
| 4 | 0 | | 0 | 0.000 |
| 5 | 0 | | 0 | 0.000 |

*HLairbv = Air leakage heat loss + ventilation heat loss
*For a balanced or supply only ventilation system HLairve = 0

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# HEAT LOSS AND GAIN SUMMARY SHEET

**MODEL:** 4504
**SFQT:** 3223 **LO#** 87511
**BUILDER:** ROYAL PINE HOMES
**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: | DETACHED | # OF STORIES (+BASEMENT): | 3 |
| FRONT FACES: | EAST | ASSUMED (Y/N): | Y |
| AIR CHANGES PER HOUR: | 2.50 | ASSUMED (Y/N): | Y |
| AIR TIGHTNESS CATEGORY: | TIGHT | ASSUMED (Y/N): | Y |
| WIND EXPOSURE: | SHELTERED | ASSUMED (Y/N): | Y |
| HOUSE VOLUME ($ft^3$): | 41767.0 | ASSUMED (Y/N): | Y |
| INTERNAL SHADING: | BLINDS/CURTAINS | ASSUMED OCCUPANTS: | 5 |
| INTERIOR LIGHTING LOAD (Btu/h/$ft^2$): | 1.40 | DC BRUSHLESS MOTOR (Y/N): | Y |
| FOUNDATION CONFIGURATION | BCIN_1 | DEPTH BELOW GRADE: | 6.0 ft |
| LENGTH: 57.0 ft | WIDTH: 37.0 ft | EXPOSED PERIMETER: | 188.0 ft |

| **2012 OBC - COMPLIANCE PACKAGE**<br>**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

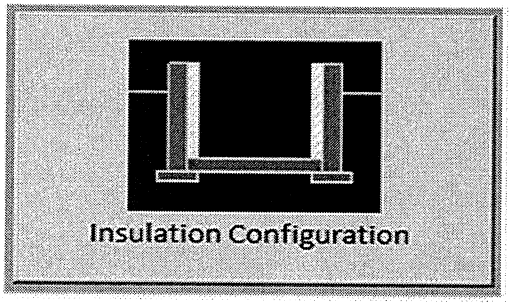
Michael O'Rourke

HVAC Designs Ltd.
375 Finley Ave, Suite 202
Ajax ON, L1S 2E2
905-619-2300

# 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): | **17.4** |  Insulation Configuration |
| Floor Width (m): | **11.3** | |
| Exposed Perimeter (m): | **0.0** | |
| Wall Height (m): | **2.7** | |
| Depth Below Grade (m): | **1.83** | |
| Window Area ($m^2$): | **1.9** | |
| Door Area ($m^2$): | **1.9** | |
| **Radiant Slab** | | |
| Heated Fraction of the Slab: | **0** | |
| Fluid Temperature (°C): | **33** | |
| **Design Months** | | |
| **Heating Month** | **1** | |
| **Foundation Loads** | | |
| **Heating Load (Watts):** | | **1897** |

**TYPE:** 4504
**LO#** 87511

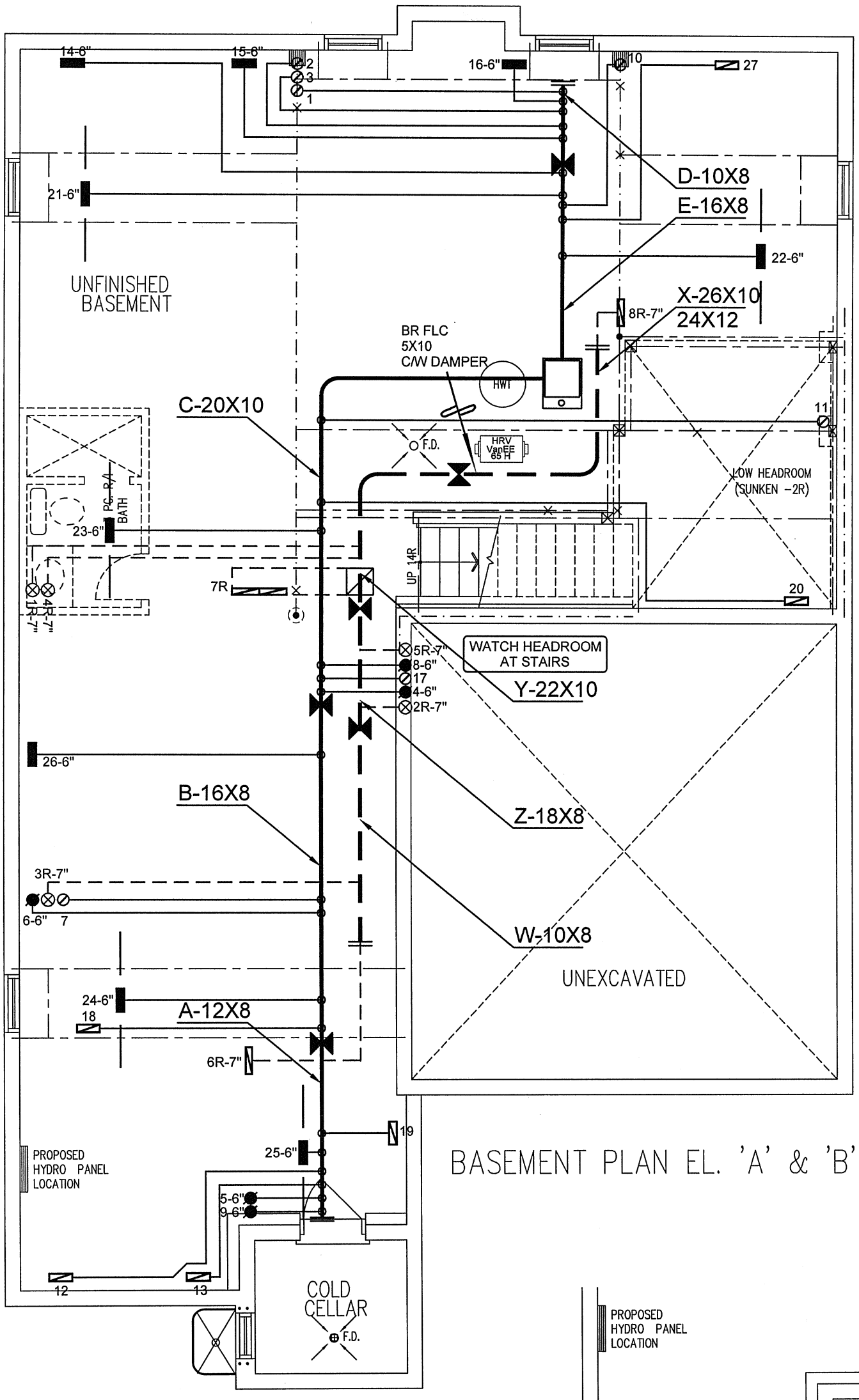
HVAC Designs Ltd.
375 Finley Ave, Suite 202
Ajax ON, L1S 2E2
905-619-2300

# Air Infiltration Residential Load Calculator

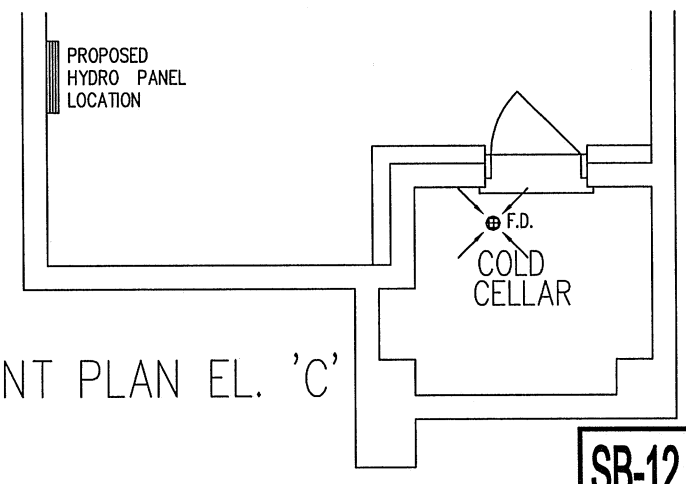
Supplemental tool for CAN/CSA-F280

| 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): | 6.40 | | | | |
| **Building Configuration** | | | | | |
| Type: | Detached | | | | |
| Number of Stories: | Two | | | | |
| Foundation: | Full | | | | |
| House Volume ($m^3$): | 1182.7 | | | | |
| **Air Leakage/Ventilation** | | | | | |
| Air Tightness Type: | Energy Star Detached (2.5 ACH) | | | | |
| Custom BDT Data: | ELA @ 10 Pa. | | | | 1104.1 $cm^2$ |
| | 2.50 | | | | ACH @ 50 Pa |
| Mechanical Ventilation (L/s): | Total Supply | | | Total Exhaust | |
| | 37.5 | | | 37.5 | |
| **Flue Size** | | | | | |
| Flue #: | #1 | #2 | #3 | #4 | |
| Diameter (mm): | 0 | 0 | 0 | 0 | |
| **Natural Infiltration Rates** | | | | | |
| **Heating Air Leakage Rate (ACH/H):** | **0.219** | | | | |
| **Cooling Air Leakage Rate (ACH/H):** | **0.068** | | | | |

**TYPE:** 4504
**LO#** 87511




BASEMENT PLAN EL. 'A' & 'B'




BASEMENT PLAN EL. 'C'

I MICHAEL O'ROURKE HAVE REVIEW 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

| SYMBOL | DESCRIPTION | SYMBOL | DESCRIPTION | SYMBOL | DESCRIPTION | SYMBOL | DESCRIPTION |
|---|---|---|---|---|---|---|---|
| —▭— | SUPPLY AIR GRILLE | ▬ | 6" SUPPLY AIR BOOT ABOVE | ▭ | 14"x8" RETURN AIR GRILLE | ▭ | RETURN AIR STACK ABOVE |
| —▬— | SUPPLY AIR GRILLE 6" BOOT | ⊘ | SUPPLY AIR STACK FROM 2nd FLOOR | ▭ | 30"x8" RETURN AIR GRILLE | ⊠ | RETURN AIR STACK 2nd FLOOR |
| ▭ | SUPPLY AIR BOOT ABOVE | ● | 6" SUPPLY AIR STACK 2nd FLOOR | ▬ | FRA- FLOOR RETURN AIR GRILLE | ⧗ | REDUCER |

| No. | Description | Date |
|---|---|---|
| 3. | REVISED AS PER CAD | JUNE/2021 |
| 2. | REVISED AS PER ARCHITECTURALS | APR/2021 |
| 1. | REVISED TO PERFORMANCE | SEPT/2020 |

REVISIONS



Client
ROYAL PINE HOMES

Project Name
**CENTREFIELD (WEST GORMLEY)**
RICHMOND HILL, ONTARIO

4504 3223 sqft

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375 Finley Ave. Suite 202 - Ajax, Ontario
L1S 2E2 Tel. 905.619.2300 - 905.420.5300 Fax 905.619.2375
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Installation to comply with the latest Ontario Building Code. All supply branch outlets shall be equipped with a manual balancing damper. Ductwork which passes through the garage or unheated spaces shall be adequately insulated and be gas-proofed.

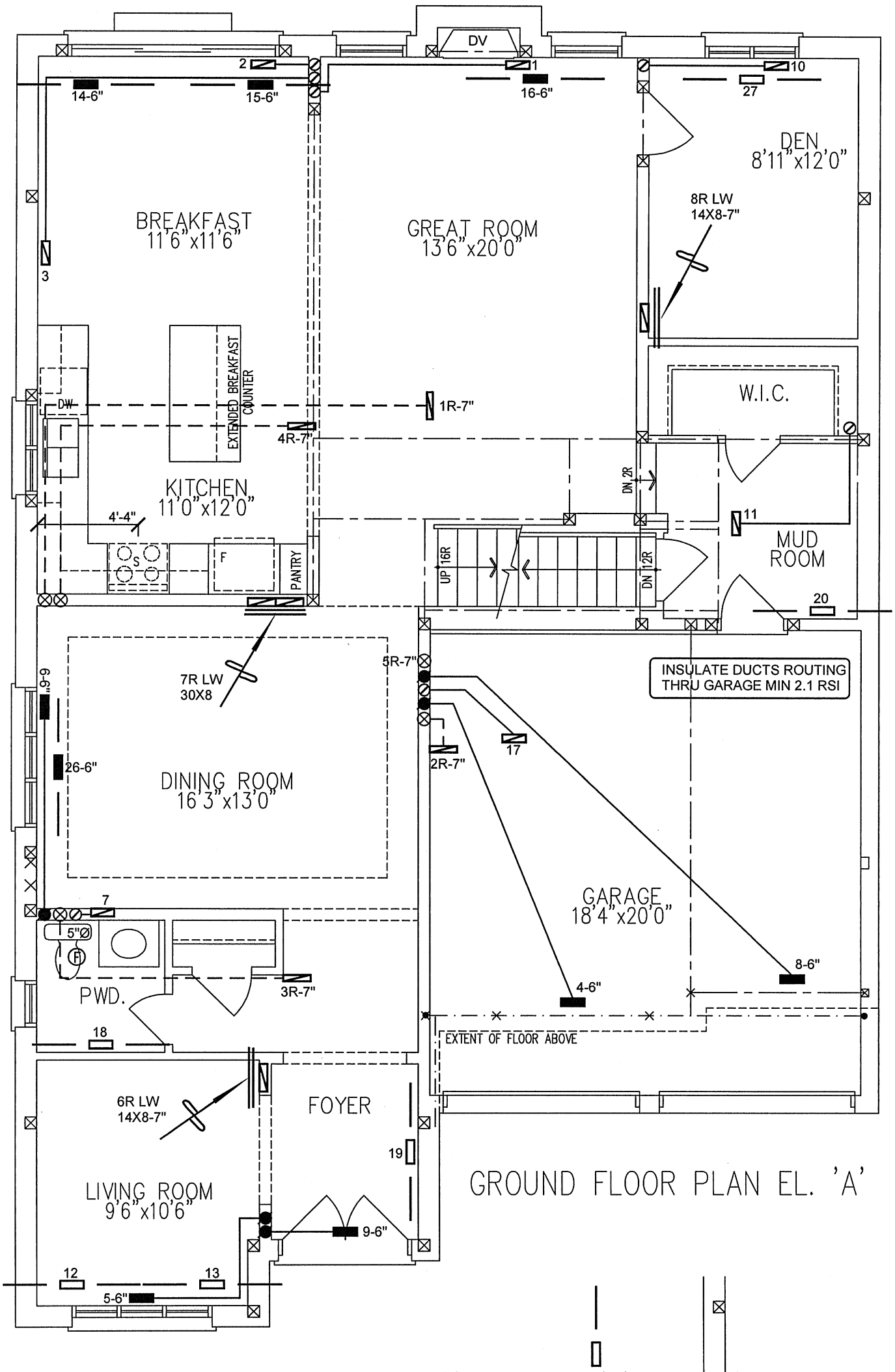
| HEAT LOSS 51107 BTU/H | |
|---|---|
| UNIT DATA | |
| MAKE | CARRIER |
| MODEL | 59TN6A-060-14V |
| INPUT | 60 MBTU/H |
| OUTPUT | 58 MBTU/H |
| COOLING | 3.5 TONS |
| FAN SPEED | 1370 cfm @ 0.6" w.c. |

| # OF RUNS | S/A | R/A | FANS |
|---|---|---|---|
| 3RD FLOOR | | | |
| 2ND FLOOR | 12 | 5 | 5 |
| 1ST FLOOR | 10 | 3 | 2 |
| BASEMENT | 5 | 1 | 0 |

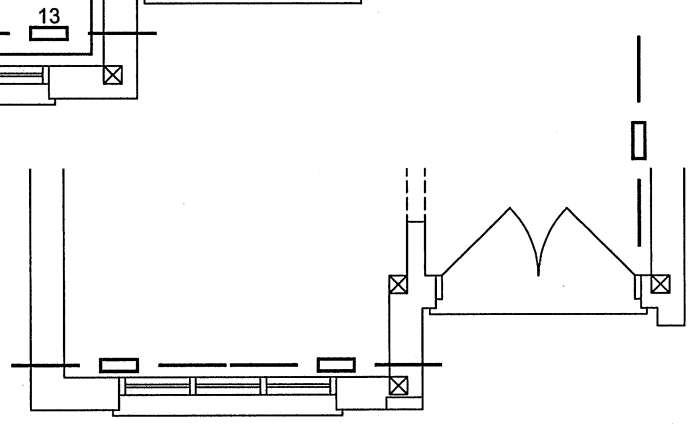
ALL S/A DIFFUSERS 4 "x10" UNLESS NOTED OTHERWISE ON LAYOUT. ALL S/A RUNS 5"Ø UNLESS NOTED OTHERWISE ON LAYOUT. UNDERCUT DOORS 1" min. FOR R/A

Sheet Title
BASEMENT HEATING LAYOUT

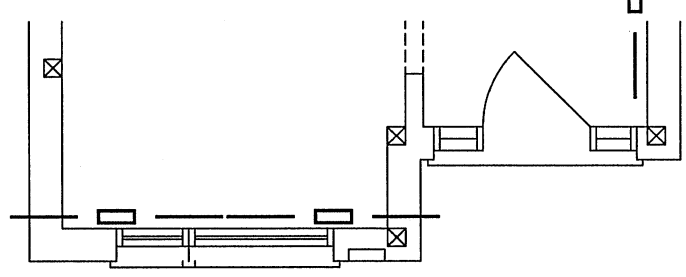
Date SEPT/2020
Scale 3/16" = 1'-0"
BCIN# 19669
LO# 87511




GROUND FLOOR PLAN EL. 'A'



GROUND FLOOR PLAN EL. 'B'



GROUND FLOOR PLAN EL. 'C'

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**CSA-F280-12**

**SB-12 PERFORMANCE**

HVAC LEGEND

| SYMBOL | DESCRIPTION | SYMBOL | DESCRIPTION | SYMBOL | DESCRIPTION | SYMBOL | DESCRIPTION |
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| No. | Description | Date |
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ROYAL PINE HOMES

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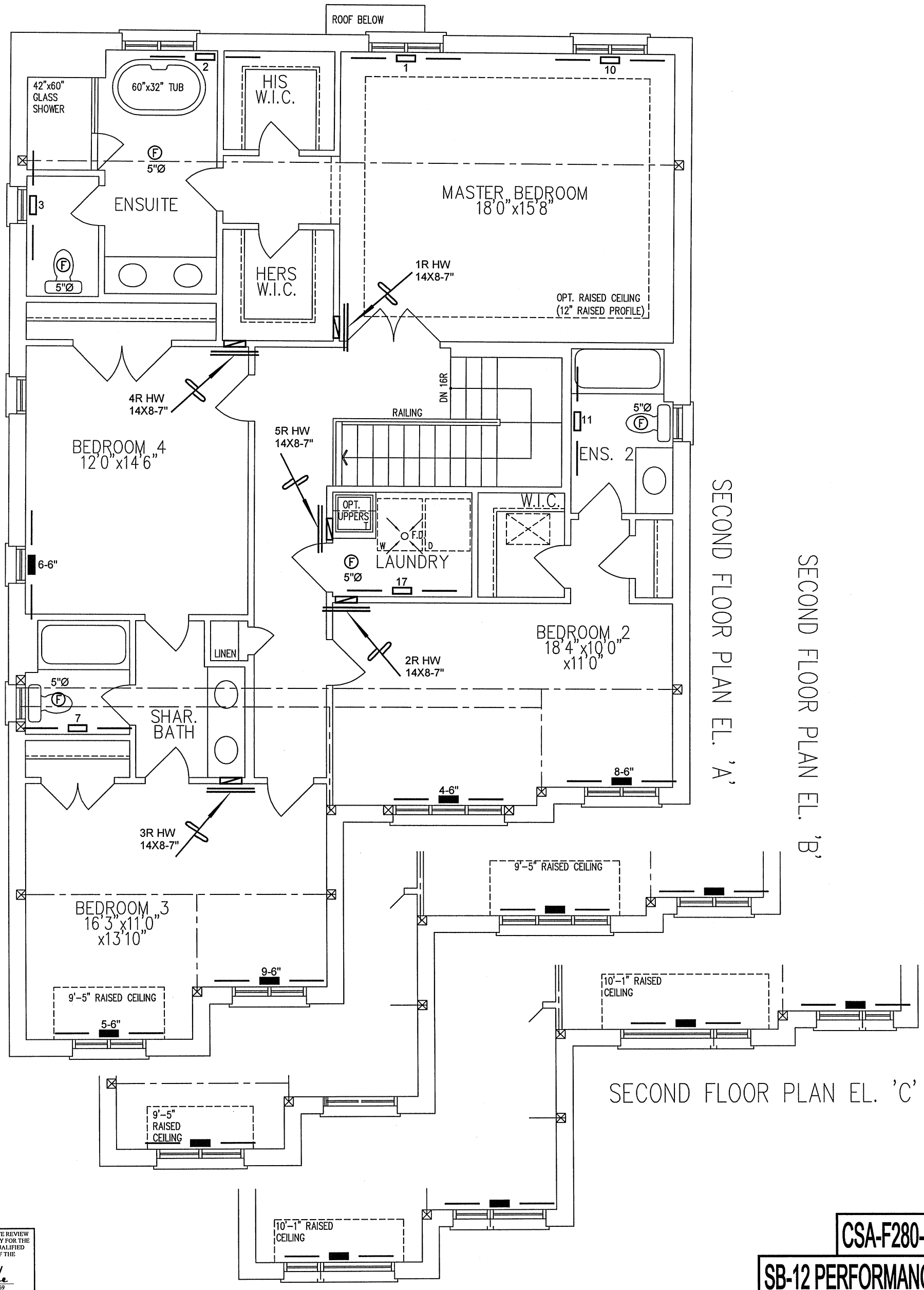
Installation to comply with the latest Ontario Building Code. All supply branch outlets shall be equipped with a manual balancing damper. Ductwork which passes through the garage or unheated spaces shall be adequately insulated and be gas-proofed.

Sheet Title
FIRST FLOOR HEATING LAYOUT

Date SEPT/2020
Scale 3/16" = 1'-0"
BCIN# 19669
LO# 87511

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**CSA-F280-12**

**SB-12 PERFORMANCE**

HVAC LEGEND

| SYMBOL | DESCRIPTION | SYMBOL | DESCRIPTION | SYMBOL | DESCRIPTION | SYMBOL | DESCRIPTION |
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Installation to comply with the latest Ontario Building Code. All supply branch outlets shall be equipped with a manual balancing damper. Ductwork which passes through the garage or unheated spaces shall be adequately insulated and be gas-proofed.

Sheet Title
SECOND FLOOR HEATING LAYOUT

Date SEPT/2020
Scale 3/16" = 1'-0"
BCIN# 19669
LO# 87511