



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 Northglen 40-2 | | Unit no. | Lot/con. |
| Municipality Bowmanville | Postal code | Plan number/ other description | |
| B. Individual who reviews and takes responsibility for design activities | | | |
| Name David Da Costa | | Firm GTA Designs Inc. | |
| Street address 2984 Drew Road, Suite 202 | | Unit no. | Lot/con. |
| Municipality Mississauga | Postal code L4T 0A4 | Province Ontario | E-mail dave@gtadesigns.ca |
| Telephone number 905-671-9800 | | Fax number 647-494-9643 | Cell number |
| C. Design activities undertaken by individual identified in Section B. [Building Code Table 3.5.2.1 of Division C] | | | |
| <input type="checkbox"/> House | <input checked="" type="checkbox"/> HVAC – House | <input type="checkbox"/> Building Structural | |
| <input type="checkbox"/> Small Buildings | <input type="checkbox"/> Building Services | <input type="checkbox"/> Plumbing – House | |
| <input type="checkbox"/> Large Buildings | <input type="checkbox"/> Detection, Lighting and Power | <input type="checkbox"/> Plumbing – All Buildings | |
| <input type="checkbox"/> Complex Buildings | <input type="checkbox"/> Fire Protection | <input type="checkbox"/> On-site Sewage Systems | |
| Description of designer's work | | Model Certification | Project #: 15-34 |
| Heating and Cooling Load Calculations | | Builder | Highcastle Homes |
| Air System Design | | Project | Bowmanville |
| Residential mechanical ventilation Design Summary | | Model | Northglen |
| Residential System Design per CAN/CSA-F280-12 | | SB-12 | 40-2 |
| D. Declaration of Designer | | | |
| I, <u>David Dacosta</u> declare that (choose one as appropriate): (print name) | | | |
| <input type="checkbox"/> I review and take responsibility for the design work on behalf of a firm registered under subsection 3.2.4 Division C of the Building Code. I am qualified, and the firm is registered, in the appropriate classes/categories. Individual BCIN: _____ 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. Individual BCIN: <u>32964</u> Basis for exemption from registration: <u>Division C 3.2.4.1. (4)</u> | | | |
| <input type="checkbox"/> 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. | | | |
| <u>February 13, 2015</u> Date | | 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 qualifications under Subsections 3.2.4. and 3.2.5. of Division C.
- Schedule 1 does not require to be completed a holder of a license, temporary license, or a certificate of authorization, issued by the Ontario Association of Architects. Schedule 1 is also not required to be completed by a holder of a license to practise, a limited licence to practise, or a certificate of authorization, issued by the Association of Professional Engineers of Ontario.



Air System Design

Package D

2986 Drew Road, Suite 202, Mississauga, Ontario L4T 0A4 Tel: 905-671-9800
Fax: 647-494-9643 e-mail dave@gtadesigns.ca

Builder: Highcastle Homes

Date: February 13, 2015

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

Project # 15-34

Project: Bowmanville

Model: Northglen 40-2

System 1

Individual BCIN: 32967

David DaCosta

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| DESIGN LOAD SPECIFICATIONS | | | | AIR DISTRIBUTION & PRESSURE | | | | FURNACE/AIR HANDLER DATA: | | | | BOILER/WATER HEATER DATA: | | | | A/C UNIT DATA: | | | |
|--------------------------------|--------|-------|--|--|--------|----------|--|---------------------------|---------------|------|------|---------------------------|-----|------|--|-----------------------|-----|-----|--|
| Level 1 Net Load | 10,349 | btu/h | | Equipment External Static Pressure | 0.5 | "w.c. | | Make | Amana | | | Make | | Type | | Amana | 1.5 | Ton | |
| Level 2 Net Load | 14,213 | btu/h | | Additional Equipment Pressure Drop | 0.225 | "w.c. | | Model | GMEC960402BNA | | | Model | | | | Cond.----- | 1.5 | | |
| Level 3 Net Load | 11,749 | btu/h | | Available Design Pressure | 0.275 | "w.c. | | Input Btu/h | 40000 | | | Input Btu/h | | | | Coil ----- | 1.5 | | |
| Level 4 Net Load | 0 | btu/h | | Return Branch Longest Effective Length | 300 | ft | | Output Btu/h | 38400 | | | Output Btu/h | | | | | | | |
| Total Heat Loss | 36,311 | btu/h | | R/A Plenum Pressure | 0.138 | "w.c. | | E.s.p. | 0.50 | " | W.C. | Min.Output Btu/h | | AWH | | | | | |
| Total Heat Gain | 16,621 | btu/h | | S/A Plenum Pressure | 0.14 | "w.c. | | Water Temp | | deg. | F. | Blower DATA: | | | | | | | |
| Ventilation PVC | 60 | cfm | | Heating Air Flow Proportioning Factor | 0.0213 | cfm/btuh | | AFUE | 96% | | | Blower Speed Selected: | W2 | | | Blower Type | ECM | | |
| Building Volume Vb | 22674 | ft³ | | Cooling Air Flow Proportioning Factor | 0.0465 | cfm/btuh | | Aux. Heat | | | | Heating Check | 773 | cfm | | Cooling Check | 773 | cfm | |
| Total Heat Loss + 10% | 39,942 | Btuh. | | R/A Temp | | | | SB-12 Package | Package D | | | Selected cfm> | 773 | W2 | | Cooling Air Flow Rate | 773 | cfm | |
| Supply Branch and Grill Sizing | | | | Diffuser loss | 0.01 | "w.c. | | Temp. Rise>>> | 46 | deg. | F. | | | | | | | | |

| Level 1 Outlets | | | | | | | | | | | | | | Level 2 Outlets | | | | | | | | | | | | | |
|--------------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|-----------------|-------|------|------|------|------|------|------|------|------|------|------|------|------|
| S/A Outlet No. | 14 | 15 | 16 | 17 | | | | | | | | | | 8 | 9 | 10 | 11 | 12 | 13 | | | | | | | | |
| Room Use | BASE | BASE | BASE | BASE | | | | | | | | | | KIT | GREAT | DIN | FOY | PWD | PLEN | | | | | | | | |
| Btu/Outlet | 2587 | 2587 | 2587 | 2587 | | | | | | | | | | 3194 | 2435 | 2445 | 3635 | 1315 | 1189 | | | | | | | | |
| Outlet Airflow Rate CFM | 55 | 55 | 55 | 55 | | | | | | | | | | 68 | 52 | 52 | 77 | 28 | 25 | | | | | | | | |
| Cooling Airflow Rate CFM | 8 | 8 | 8 | 8 | | | | | | | | | | 122 | 90 | 75 | 54 | 9 | 5 | | | | | | | | |
| Duct Design Pressure | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 |
| Actual Duct Length | 33 | 16 | 22 | 40 | | | | | | | | | | 36 | 20 | 4 | 45 | 38 | 9 | | | | | | | | |
| Equivalent Length | 120 | 120 | 100 | 125 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 130 | 140 | 100 | 115 | 110 | 120 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 |
| Total Effective Length | 153 | 136 | 122 | 165 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 166 | 160 | 104 | 160 | 148 | 129 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 |
| Adjusted Pressure | 0.08 | 0.10 | 0.11 | 0.08 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 | 0.08 | 0.08 | 0.13 | 0.08 | 0.09 | 0.10 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 |
| Duct Size Round | 6 | 6 | 6 | 6 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 6 | 6 | 6 | 6 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 |
| Outlet Size | 4x10 | 4x10 | 4x10 | 4x10 | 3x10 | 3x10 | 3x10 | 3x10 | 3x10 | 3x10 | 3x10 | 3x10 | 3x10 | 4x10 | 4x10 | 4x10 | 4x10 | 3x10 | 3x10 | 3x10 | 3x10 | 3x10 | 3x10 | 3x10 | 3x10 | 3x10 | 3x10 |
| Trunk | C | A | A | B | | | | | | | | | | C | D | D | B | C | D | | | | | | | | |

| | Level 3 Outlets | | | | | | | | | | | | | | Level 4 Outlets | | | | | | | | | | | | | |
|--------------------------|-----------------|------|-------|-------|------|-------|-------|------|------|------|------|------|------|------|-----------------|------|------|------|------|------|------|------|------|------|------|------|--|--|
| S/A Outlet No. | 1 | 2 | 3 | 5 | 6 | 7 | 4 | | | | | | | | | | | | | | | | | | | | | |
| Room Use | MAST | ENS | BED 2 | BED 3 | BATH | BED 4 | LAUND | | | | | | | | | | | | | | | | | | | | | |
| Btu/Outlet | 2837 | 1495 | 1348 | 2372 | 1253 | 1528 | 916 | | | | | | | | | | | | | | | | | | | | | |
| Outlet Airflow Rate CFM | 60 | 32 | 29 | 51 | 27 | 33 | 19 | | | | | | | | | | | | | | | | | | | | | |
| Cooling Airflow Rate CFM | 93 | 26 | 35 | 61 | 62 | 48 | 60 | | | | | | | | | | | | | | | | | | | | | |
| Duct Design Pressure | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 | | |
| Actual Duct Length | 42 | 25 | 22 | 15 | 54 | 55 | 38 | | | | | | | | | | | | | | | | | | | | | |
| Equivalent Length | 145 | 110 | 90 | 130 | 145 | 115 | 110 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | | |
| Total Effective Length | 187 | 135 | 112 | 145 | 199 | 170 | 148 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | | |
| Adjusted Pressure | 0.07 | 0.10 | 0.12 | 0.09 | 0.07 | 0.08 | 0.09 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 | | | |
| Duct Size Round | 6 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | | |
| Outlet Size | 4x10 | 3x10 | 3x10 | 3x10 | 3x10 | 3x10 | 3x10 | 3x10 | 3x10 | 3x10 | 3x10 | 3x10 | 3x10 | 3x10 | 3x10 | 3x10 | 3x10 | 3x10 | 3x10 | 3x10 | 3x10 | 3x10 | 3x10 | 3x10 | 3x10 | 3x10 | | |
| Trunk | B | D | D | D | B | B | A | | | | | | | | | | | | | | | | | | | | | |

| Return Branch And Grill Sizing | | | | | | | | | | | Grill Pressure Loss | | 0.02 "w.c. | |
|--------------------------------|------|------|------|------|------|------|------|------|------|------|---------------------|--|------------|--|
| R/A Inlet No. | 1R | 2R | 3R | 4R | 5R | 6R | 7R | 8R | 9R | 10R | 11R | | | |
| Inlet Air Volume CFM | 120 | 120 | 120 | 278 | 110 | 25 | | | | | | | | |
| Duct Design Pressure | 0.12 | 0.12 | 0.12 | 0.12 | 0.12 | 0.12 | 0.12 | 0.12 | 0.12 | 0.12 | 0.12 | | | |
| Actual Duct Length | 38 | 29 | 28 | 17 | 32 | 6 | | | | | | | | |
| Equivalent Length | 200 | 185 | 190 | 145 | 190 | 130 | 70 | 70 | 70 | 70 | 70 | | | |
| Total Effective Length | 238 | 214 | 218 | 162 | 222 | 136 | 70 | 70 | 70 | 70 | 70 | | | |
| Adjusted Pressure | 0.05 | 0.05 | 0.05 | 0.07 | 0.05 | 0.09 | 0.17 | 0.17 | 0.17 | 0.17 | 0.17 | | | |
| Duct Size Round | 7 | 7 | 7 | 2x8 | 7 | 5 | | | | | | | | |
| Inlet Size | 8 | 8 | 8 | 8 | FLC | 8 | | | | | | | | |
| " " | x | x | x | x | x | x | x | x | x | x | x | | | |
| Inlet Size | 14 | 14 | 14 | 30 | | 14 | | | | | | | | |

| Return Trunk Duct Sizing | | | | | |
|--------------------------|-----|--------|-------|------------|-------|
| Trunk | CFM | Press. | Round | Rect. Size | |
| Drop | 773 | 0.05 | 14.5 | 24x10 | |
| Z | 773 | 0.05 | 14.5 | 24x8 | 18x10 |
| Y | 508 | 0.05 | 12.5 | 18X8 | |
| X | | | | | |
| W | | | | | |
| V | | | | | |
| U | | | | | |
| T | | | | | |
| S | | | | | |
| R | | | | | |
| Q | | | | | |


| Supply Trunk Duct Sizing | | | | |
|--------------------------|-----|--------|-------|------------|
| Trunk | CFM | Press. | Round | Rect. Size |
| A | 533 | 0.06 | 12.5 | 18x8 |
| B | 403 | 0.06 | 11.0 | 14X8 |
| C | 151 | 0.06 | 8.0 | 8x8 |
| D | 240 | 0.06 | 9.0 | 8x8 |
| E | | | | |
| F | | | | |
| G | | | | |
| H | | | | |
| I | | | | |
| J | | | | |
| K | | | | |

| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|--------------------------------|--|--|--|-------------------|-------|--|--------------------------------|----|------|-----|------|-----|------|-------|------|-----|------|-----|------|-----|------|------|------|-----|------|-----|------|----|------|----|------|----|------|-----|------|--|------|--|------|------|------|--|------|--|------|----|------|--|------|------|------|----|--|--|------|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|
| Level 2 | | | | | | | | | | | | KIT | | GREAT | | DIN | | FOY | | PWD | | PLEN | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Run ft. exposed wall A | | | | 31 | A | | | 27 | A | | | 26 | A | | | 37 | A | | | 9 | A | | | 26 | A | | | A | | | A | | | A | | | A | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Run ft. exposed wall B | | | | | B | | | | B | | | | B | | | | B | | | | B | | | | B | | | B | | | B | | | B | | | B | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Ceiling height | | | | 10 | | | | | | 10 | | | | | | 10 | | | | | | 10 | | | | | | 2 | | | | | | 10 | | | | | | 10 | | | | | | 10 | | | | | | 10 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Floor area | | | | 218 | Area | | | | | 191 | Area | | | | | 153 | Area | | | | | 101 | Area | | | | | 94 | Area | | | | | 160 | Area | | | | | Area | | | | | Area | | | | | Area | | | | | Area | | | | | | | | | | | | | | | | | | | | | | | |
| Exposed Ceilings A | | | | | A | | | | A | | | | A | | | | A | | | | B | | | | A | | | | A | | | | A | | | | A | | | | A | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Exposed Ceilings B | | | | | B | | | | B | | | | B | | | | B | | | | B | | | | B | | | | B | | | | B | | | | B | | | | B | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Exposed Floors | | | | | Flr | | | | Flr | | | | Flr | | | | Flr | | | | Flr | | | | Flr | | | | Flr | | | | Flr | | | | Flr | | | | Flr | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Gross Exp Wall A | | | | 310 | | | | | | 270 | | | | | | 260 | | | | | | 370 | | | | | | 90 | | | | | | 52 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Gross Exp Wall B | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Components | | | | R-Values | Loss | | Gain | | Loss | | Gain | | Loss | | Gain | | Loss | | Gain | | Loss | | Gain | | Loss | | Gain | | Loss | | Gain | | Loss | | Gain | | Loss | | Gain | | Loss | | Gain | | Loss | | Gain | | Loss | | Gain | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| North Shaded | | | | 3.15 | 24.13 | | 11.31 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| East/West | | | | 3.15 | 24.13 | | 27.75 | | 30 | | 724 | 832 | 14 | | 338 | 388 | 17 | | 410 | 192 | 15 | | 362 | 416 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| South | | | | 3.15 | 24.13 | | 21.28 | | | | | | | | | | | | | | 4 | | 97 | 85 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Existing Windows | | | | 1.99 | 38.19 | | 22.15 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Skylight | | | | 2.03 | 37.44 | | 88.23 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Doors | | | | 3.01 | 25.25 | | 3.65 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Net exposed walls A | | | | 15.13 | 5.02 | | 0.73 | | 280 | | 1406 | 204 | 256 | | 1286 | 186 | 243 | | 1221 | 177 | 341 | | 1713 | 248 | 69 | | 530 | 77 | 52 | | 261 | 38 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Net exposed walls B | | | | 8.50 | 8.94 | | 1.29 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Exposed Ceilings A | | | | 50.00 | 1.52 | | 0.76 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Exposed Ceilings B | | | | 22.86 | 3.32 | | 1.66 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Exposed Floors | | | | 22.86 | 3.32 | | 0.22 | | | | | | | | | | | | | | | | | | | | 160 | | 532 | 35 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Foundation Conductive Heatloss | | | | Slab On Grade (x) | | | x | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Total Conductive | | | | Heat Loss | | | | | 2130 | | | | 1624 | | | | 1631 | | | | 2424 | | | | 877 | | | | 793 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | Heat Gain | | | | | 1036 | | | | 575 | | | | 369 | | | | 786 | | | | 127 | | | | 73 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Air Leakage | | | | Heat Loss/Gain | | | 0.2808 0.0440 | | 598 | | 46 | 456 | | 25 | 458 | | 16 | 681 | | 35 | 246 | | 6 | 223 | | 3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Ventilation | | | | Case 1 | | | 0.16 0.10 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | Case 2 | | | 82.08 11.88 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | Case 3 | | | x 0.22 0.10 | | | | 466 | | 102 | 355 | | 56 | 357 | | 36 | 530 | | 77 | 192 | | 12 | 173 | | 7 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Heat Gain People | | | | | | | 239 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Appliances Loads | | | | 1 =.25 percent | | | 3308 | | 1 | | | 827 | 1 | 827 | | 1 | 827 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Duct and Pipe loss | | | | | | | 10% | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Level 2 HL Total | | | | 14,213 | | | Total heat loss for per room | | 3194 | | | | 2435 | | | | 2445 | | | | 3635 | | | | 1315 | | | | 1189 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Level 2 HG Total | | | | 7.628 | | | Total heat gain per room x 1.4 | | | | 2614 | | | | 1928 | | 1623 | | | | 1167 | | 188 | | | | 108 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

Package D

btu/h

[illegible]

I review and take responsibility for the design work and am qualified in the appropriate category as an "other designer" under Division C subsection 3.2.5. of the Building Code. Individual BCIN: 32964  David DaCosta

Project: Bowmanville **Model:** 40-2 **Northglen** **Page** 5

RESIDENTIAL MECHANICAL VENTILATION DESIGN SUMMARY

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

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

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

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

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

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

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

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

| Total Ventilation Capacity 9.32.3.3(1) | | | |
|--|-----|--------|------------|
| Bsmt & Master Bdrm | 2 @ | 20 cfm | 40 cfm |
| Other Bedrooms | 2 @ | 10 cfm | 20 cfm |
| Bathrooms & Kitchen | 4 @ | 10 cfm | 40 cfm |
| Other rooms | 4 @ | 10 cfm | 40 cfm |
| Total | | | <u>140</u> |


| Principal Ventilation Capacity 9.32.3.4(1) | | | |
|--|-----|--------|-----------|
| Master bedroom | 1 @ | 30 cfm | 30 cfm |
| Other bedrooms | 2 @ | 15 cfm | 30 cfm |
| Total | | | <u>60</u> |

| Principal Exhaust Fan Capacity | | |
|--------------------------------|-------|-----------|
| Make | Model | Location |
| Broan | 684N | Ens |
| 90 cfm | | 2.5 Sones |

| Heat Recovery Ventilator | |
|---------------------------------|----------|
| Make | |
| Model | |
| | cfm high |
| Sensible efficiency @ -25 deg C | 0% |
| <i>HRV is HVI listed</i> | |

| Supplemental Ventilation Capacity | |
|--------------------------------------|-----------------|
| Total ventilation capacity | 140.0 |
| Less principal exhaust capacity | <u>60.0</u> |
| REQUIRED supplemental vent. Capacity | <u>80.0</u> cfm |

| Supplemental Fans 9.32.3.5. | | | |
|---|-----|-------|-------|
| Location | cfm | Model | Sones |
| Bath | 50 | 770 | 2.5 |
| Pwd | 50 | 770 | 2.5 |
| <i>all fans HVI listed</i> Make Broan or Equiv. | | | |

| Designer Certification | | | |
|---|--|--------|-------|
| I hereby certify that this ventilation system has been designed in accordance with the Ontario Building Code. | | | |
| Name | David Da Costa | | |
| Signature |  | | |
| HRAI # | 5190 | BCIN # | 32964 |
| Date | February 13, 2015 | | |

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

For use by Principal Authority

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

A. Project Information

| | | | |
|------------------------------|---------------------------|-------------|--------------------------------------|
| Building number, street name | Northglen 40-2 | Unit number | Lot/Con |
| Municipality | Bowmanville | Postal code | Reg. Plan number / other description |

B. Compliance Option

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

C. Project Design Conditions

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

| Windows+Skylights+Glass Doors | | Other Building Conditions | | | |
|-------------------------------|--------------------|---------------------------|--|---|--|
| Gross Wall Area = | 240 m ² | % Windows+ <u>7%</u> | <input type="checkbox"/> ICF Basement | <input type="checkbox"/> Walkout Basement | <input type="checkbox"/> Log/Post&Beam |
| Gross Window+ Area = | 18 m ² | | <input type="checkbox"/> ICF Above Grade | <input type="checkbox"/> Slab-on-ground | |

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


| Building Component | RSI / R values | Building Component | Efficiency |
|--|----------------|---|------------|
| Thermal Insulation | | Windows & Doors¹ | |
| Ceiling with Attic Space | 50 | Windows/Sliding Glass Doors | 1.8 |
| Ceiling without Attic Space | 31 | Skylights | 2.8 |
| Exposed Floor | 31 | Mechanicals | |
| Walls Above Grade | 24 | Space Heating Equip. ² | 94% |
| Basement Walls | 20 | HRV Efficiency (%) | |
| Slab (all >600mm below grade) | x | DHW Heater (EF) | 0.67 |
| Slab (edge only ≤600mm below grade) | 10 | NOTES | |
| Slab (all ≤600mm below grade, or heated) | 10 | 1. Provide U-Value in W/m ² .K, or ER rating | |
| | | 2. Provide AFUE or indicate if condensing type combined system used | |






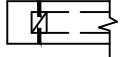













E. Performance Design Verification [complete applicable sections if *SB-12 Performance*, *Energy Star* or *EnerGuide80* options used]

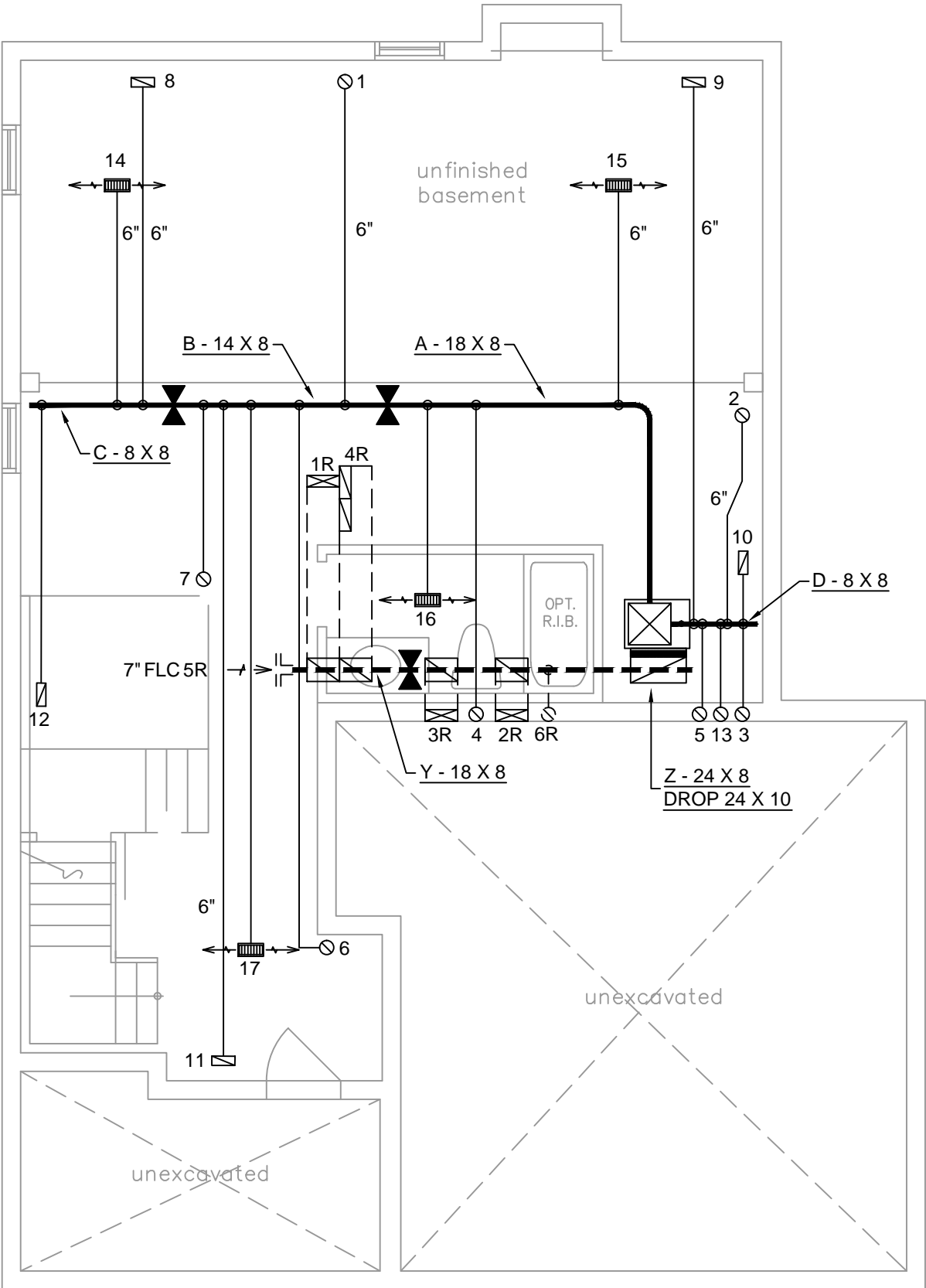
SB-12 Performance:
The annual energy consumption using Subsection 2.1.1. SB-12 Package _____ is _____ Gj (1 Gj =1000Mj)
The annual energy consumption of this house as designed is _____ Gj
The software used to simulate the annual energy use of the building is: _____
The building is being designed using an air leakage of _____ air changes per hour @50Pa.

Energy Star: BOP form attached. The house will be labeled on completion by:
Energy Star and EnerGuide80:
Evaluator/Advisor/Rater Name: _____ Evaluator/Advisor/Rater Licence #: _____

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

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

| H.V.A.C. SYMBOLS | | | |
|---|------------------------------------|---|--|
|  | FLEX DUCT |  | RETURN AIR GRILLE (SIZE INDICATED ON DRAWING) |
|  | RIDIT ROUND DUCT |  | RETURN AIR PIPE RISER |
|  | SUPPLY MAIN DUCT |  | DUCT CONNECTION TO JOIST LINING |
|  | SUPPLY DIFFUSER |  | RETURN MAIN DUCT |
|  | LOW/HIGH WALL/KICK SUPPLY DIFFUSER |  | RETURN ROUND DUCT |
|  | HRV EXHAUST GRILL |  | RETURN AIR RISER UP TO FLOOR ABOVE |
|  | SUPPLY AIR PIPE RISER |  | RETURN AIR FROM BASEMENT SECOND FLOOR |
|  | VOLUME DAMPER |  | W/R EXHAUST FAN |
| ABBREVIATIONS | | | |
| S.A. | SUPPLY AIR |  | W/R PRINCIPAL EXHAUST FAN |
| R.A. | RETURN AIR | | |
|  | THERMOSTAT | | |
|  | PRINCIPAL EXHAUST FAN SWITCH | | |



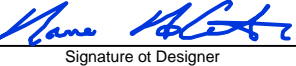
INSULATE ALL DUCTS IN UNCONDITIONED SPACES MIN. R12 SEAL ALL JOINTS WITH APPROVED SEALANT OR FOIL TAPE

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

The undersigned has reviewed and takes responsibility for this design on behalf of GTA Designs Inc. and has the qualifications and meets the requirements set out in the Building Code to be a designer

QUALIFICATION INFORMATION

Required unless design is exempt under Division C 3.2.5.1 of the Ontario building code

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

OBC 2012

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

NOTES

INSTALLATION TO COMPLY WITH THE LATEST ONTARIO BUILDING CODE.

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

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

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

HEATING CONTRACTOR MUST WORK FROM APPROVED PLANS.

ANY ALTERATIONS TO THIS ORIGINAL PLAN ARE NOT THE RESPONSABILITY OF GTA DESIGNS.

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

 **gtaDesigns**






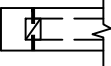













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email: dave@gtadesigns.ca
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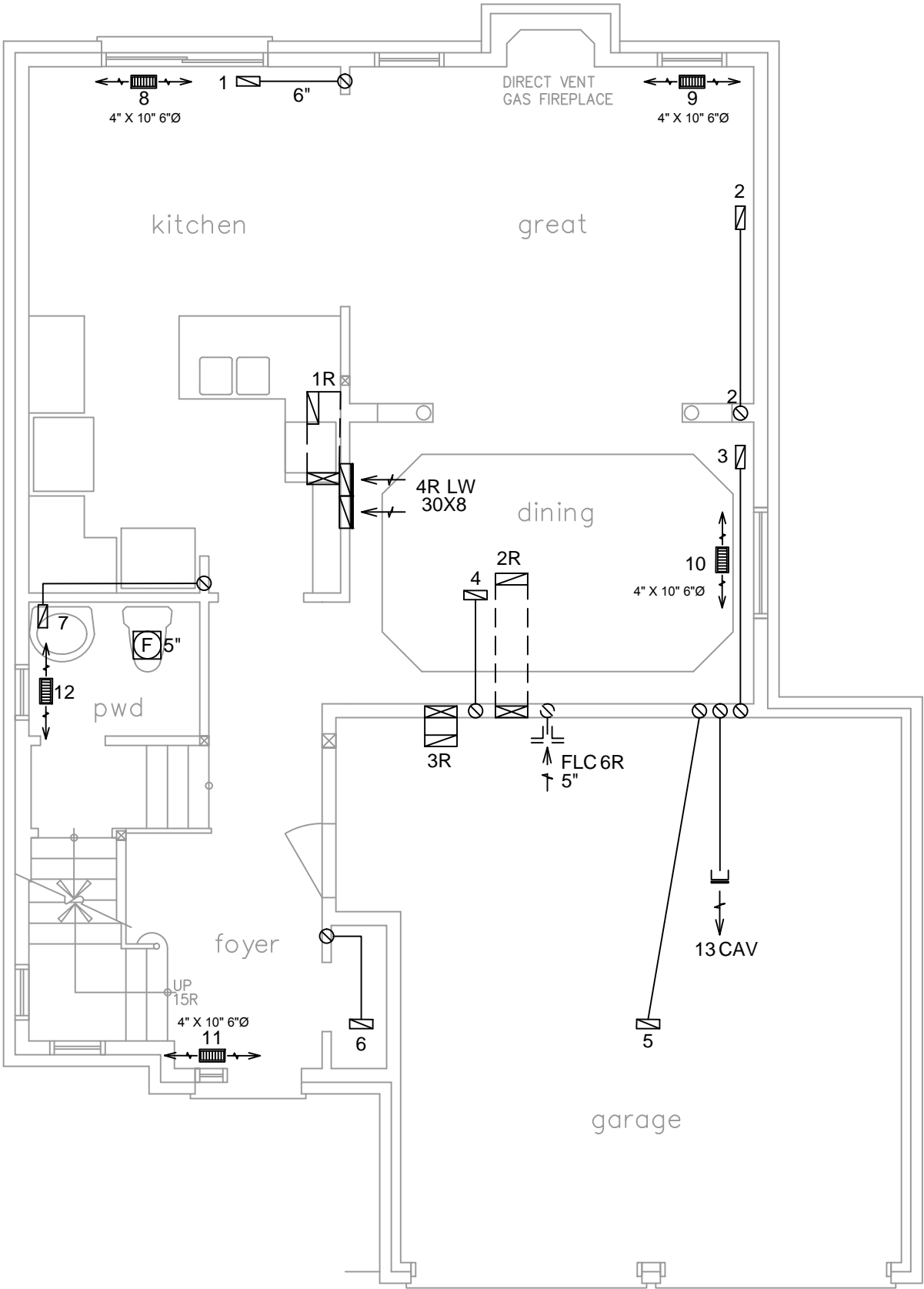
| | | |
|----------------------|---------------|---------|
| HEAT-LOSS | 36,311 | BTU/HR. |
| UNIT MAKE | AMANA | |
| UNIT MODEL | GMEC960402BNA | |
| UNIT HEATING INPUT | 40,000 | BTU/HR. |
| UNIT HEATING OUTPUT | 38,400 | BTU/HR. |
| A/C COOLING CAPACITY | 1.5 | TONS. |
| FAN SPEED | 773 | CFM |

| # OF RUNS | S/A | R/A | FANS |
|-----------|-----|-----|------|
| 3RD FLOOR | | | |
| 2ND FLOOR | 7 | 3 | 3 |
| 1ST FLOOR | 6 | 2 | 2 |
| BASEMENT | 4 | 1 | |

| | |
|-------------|------------|
| FLOOR PLAN: | BASEMENT |
| DRAWN BY: | D. DACOSTA |
| LAYOUT NO. | 15-34 |
| SQFT | 1846 |
| DRAWING NO. | 1/3 |

| | |
|----------|---------------------------------------|
| DATE: | FEBRUARY 13, 2015 |
| CLIENT: | HIGHCASTLE HOMES |
| PROJECT: | 40-2 NORTHGLEN BOWMANVILLE, ON. |
| SCALE: | 3/16" = 1"-0" |

| H.V.A.C. SYMBOLS | | | |
|---|------------------------------------|---|--|
|  | FLEX DUCT |  | RETURN AIR GRILLE (SIZE INDICATED ON DRAWING) |
|  | RIDIT ROUND DUCT |  | RETURN AIR PIPE RISER |
|  | SUPPLY MAIN DUCT |  | DUCT CONNECTION TO JOIST LINING |
|  | SUPPLY DIFFUSER |  | RETURN MAIN DUCT |
|  | LOW/HIGH WALL/KICK SUPPLY DIFFUSER |  | RETURN ROUND DUCT |
|  | HRV EXHAUST GRILL |  | RETURN AIR RISER UP TO FLOOR ABOVE |
|  | SUPPLY AIR PIPE RISER |  | RETURN AIR FROM BASEMENT SECOND FLOOR |
|  | VOLUME DAMPER |  | W/R EXHAUST FAN |
| ABBREVIATIONS | | | |
| S.A. | SUPPLY AIR |  | W/R PRINCIPAL EXHAUST FAN |
| R.A. | RETURN AIR | | |
|  | THERMOSTAT | | |
|  | PRINCIPAL EXHAUST FAN SWITCH | | |



CIRCULATION FAN SWITCH
TO BE CENTRALLY
LOCATED

INSULATE ALL DUCTS IN
UNCONDITIONED
SPACES MIN. R12
SEAL ALL JOINTS WITH
APPROVED SEALANT
OR FOIL TAPE

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

The undersigned has reviewed and takes responsibility for this design on behalf of GTA Designs Inc. and has the qualifications and meets the requirements set out in the Building Code to be a designer

QUALIFICATION INFORMATION

Required unless design is exempt under Division C 3.2.5.1 of the Ontario building code

David Da Costa



B.C.I.N. 32964

Signature of Designer

OBC 2012

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

NOTES

INSTALLATION TO COMPLY WITH THE LATEST ONTARIO BUILDING CODE.
ALL SUPPLY OUTLETS TO BE 5" DIA. UNLESS OTHERWISE SPECIFIED.
ALL R/A PARTITIONS 6" (FIRST FLOOR ONLY)
INSULATE DUCTS IN UNCONDITIONED SPACES R12
UNDERCUT ALL DOORS 1" MIN.
HEATING CONTRACTOR MUST WORK FROM APPROVED PLANS.
ANY ALTERATIONS TO THIS ORIGINAL PLAN ARE NOT THE RESPONSABILITY OF GTA DESIGNS.
GTA DESIGNS MUST BE CONSULTED IF KITCHEN EXHAUST FAN EXCEEDS 700 CFM DEPRESSURIZATION MAY OCCUR WITH IN THE DWELLING



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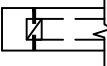













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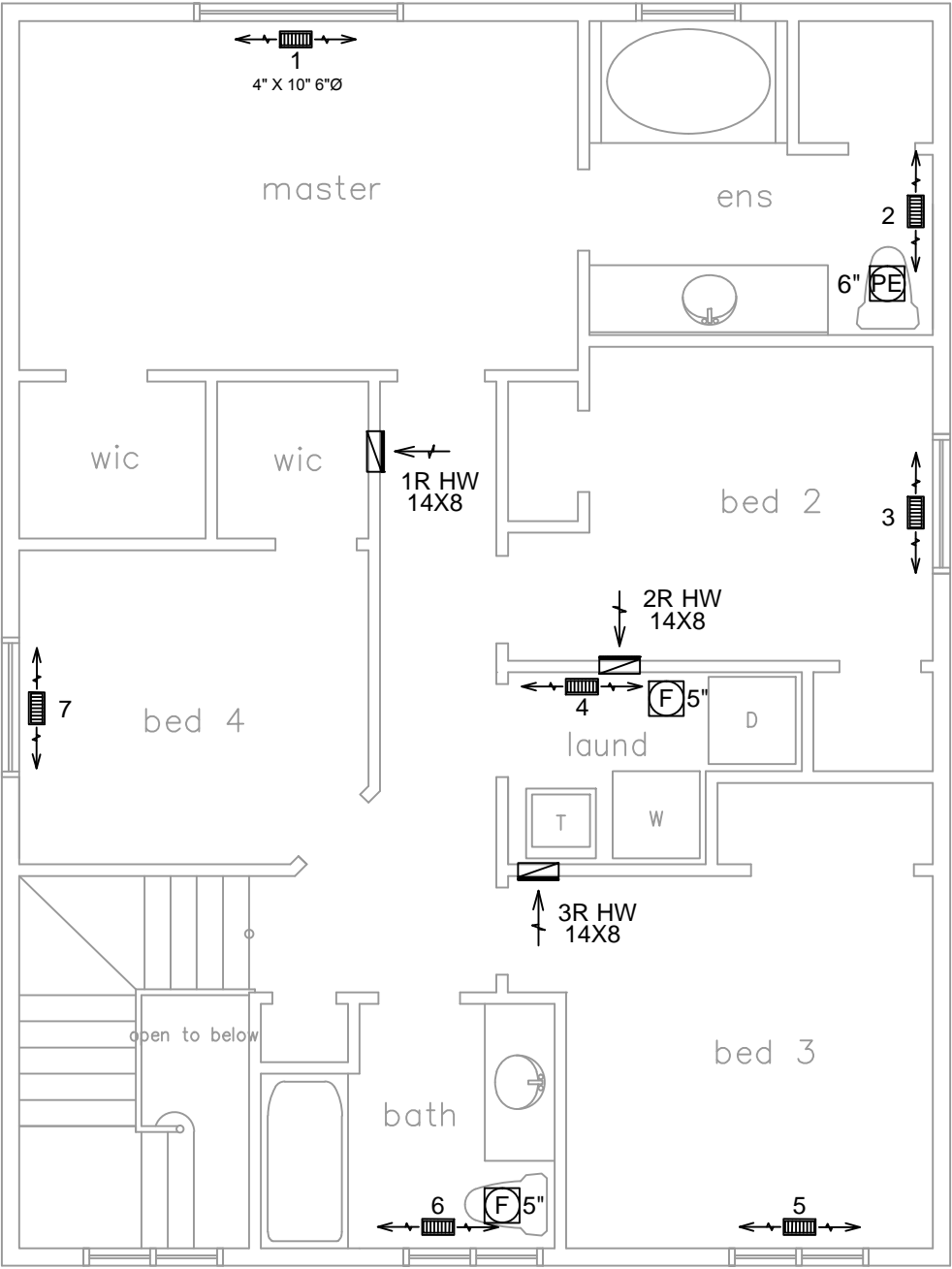
L4T 0A4 TEL: 416-268-6820
email: dave@gtadesigns.ca
web: www.gtadesigns.ca

| | |
|----------------------|---------|
| HEAT-LOSS | BTU/HR. |
| UNIT MAKE | |
| UNIT MODEL | |
| UNIT HEATING INPUT | BTU/HR. |
| UNIT HEATING OUTPUT | BTU/HR. |
| A/C COOLING CAPACITY | TONS. |
| FAN SPEED | CFM |

| # OF RUNS | S/A | R/A | FANS |
|--------------------------|-------------|-----|------|
| 3RD FLOOR | | | |
| 2ND FLOOR | | | |
| 1ST FLOOR | | | |
| BASEMENT | | | |
| FLOOR PLAN: GROUND FLOOR | | | |
| DRAWN BY | SQFT | | |
| D. DACOSTA | 1846 | | |
| LAYOUT NO. | DRAWING NO. | | |
| 15-34 | 2/3 | | |

| | |
|----------|---------------------------------------|
| DATE: | FEBRUARY 13, 2015 |
| CLIENT: | HIGHCASTLE HOMES |
| PROJECT: | 40-2 NORTHGLEN BOWMANVILLE, ON. |
| SCALE: | 3/16" = 1"-0" |

| H.V.A.C. SYMBOLS | | | |
|---|------------------------------------|---|--|
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|  | RIDIT ROUND DUCT |  | RETURN AIR PIPE RISER |
|  | SUPPLY MAIN DUCT |  | DUCT CONNECTION TO JOIST LINING |
|  | SUPPLY DIFFUSER |  | RETURN MAIN DUCT |
|  | LOW/HIGH WALL/KICK SUPPLY DIFFUSER |  | RETURN ROUND DUCT |
|  | HRV EXHAUST GRILL |  | RETURN AIR RISER UP TO FLOOR ABOVE |
|  | SUPPLY AIR PIPE RISER |  | RETURN AIR FROM BASEMENT SECOND FLOOR |
|  | VOLUME DAMPER |  | W/R EXHAUST FAN |
| ABBREVIATIONS | |  | W/R PRINCIPAL EXHAUST FAN |
| S.A. | SUPPLY AIR | | |
| R.A. | RETURN AIR | | |
|  | THERMOSTAT | | |
|  | PRINCIPAL EXHAUST FAN SWITCH | | |



INSULATE ALL DUCTS IN UNCONDITIONED SPACES MIN. R12
SEAL ALL JOINTS WITH APPROVED SEALANT OR FOIL TAPE

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

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QUALIFICATION INFORMATION

Required unless design is exempt under Division C 3.2.5.1 of the Ontario building code

David Da Costa

Handwritten signature of David Da Costa

B.C.I.N. 32964

Signature of Designer

OBC 2012

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

NOTES

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email: dave@gtadesigns.ca
web: www.gtadesigns.ca

| | |
|----------------------|---------|
| HEAT-LOSS | BTU/HR. |
| UNIT MAKE | |
| UNIT MODEL | |
| UNIT HEATING INPUT | BTU/HR. |
| UNIT HEATING OUTPUT | BTU/HR. |
| A/C COOLING CAPACITY | TONS. |
| FAN SPEED | CFM |

| # OF RUNS | S/A | R/A | FANS |
|--------------|-------------|-----|------|
| 3RD FLOOR | | | |
| 2ND FLOOR | | | |
| 1ST FLOOR | | | |
| BASEMENT | | | |
| FLOOR PLAN: | | | |
| SECOND FLOOR | | | |
| DRAWN BY | SQFT | | |
| D. DACOSTA | 1846 | | |
| LAYOUT NO. | DRAWING NO. | | |
| 15-34 | 3/3 | | |

| | |
|----------|---------------------------------------|
| DATE: | FEBRUARY 13, 2015 |
| CLIENT: | HIGHCASTLE HOMES |
| PROJECT: | 40-2 NORTHGLEN BOWMANVILLE, ON. |
| SCALE: | 3/16" = 1"-0" |