HVAC DESIGNS LTD.

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LOT 28

SITE NAME: MINNISSALE HOMES CORP — TYPE: MILLWOOD 2 — DATE: Aug-18
BUILDER: GREENPARK HOMES — GFA: 2654 — LO# 79581
WINTER NATURAL AIR CHANGE RATE 0.364 — HEAT LOSS ΔT °F. 74 — CSA-F280-12
SUMMER NATURAL AIR CHANGE RATE 0.115 — HEAT GAIN ΔT °F. 11 — SB-12 PACKAGE A1

| ROOM USE | | | MBR | | | ENS | | | | BED-2 | | | BED-3 | | | BED-4 | | | BATH | | | | | | ENS-2 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| EXP. WALL | | | 34 | | | 29 | | | | 26 | | | 33 | | | 11 | | | 10 | | | | | | 15 | | | | | |
| CLG. HT. | | | 10 | | | 9 | | | | 9 | | | 10 | | | 9 | | | 9 | | | | | | 9 | | | | | |
| | FACTORS | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| GRS.WALL AREA | LOSS | GAIN | 340 | | | 261 | | | | 234 | | | 330 | | | 99 | | | 90 | | | | | | 135 | | | | | |
| GLAZING | | | LOSS | | GAIN | LOSS | | GAIN | | LOSS | | GAIN | LOSS | | GAIN | LOSS | | GAIN | LOSS | | GAIN | | | | LOSS | | GAIN | | | |
| NORTH | 20.8 | 15.5 | 0 | 0 | 0 | 0 | 0 | 0 | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | | 0 | 0 | 0 | | | |
| EAST | 20.8 | 41.0 | 0 | 0 | 0 | 0 | 0 | 0 | | 20 | 416 | 821 | 30 | 623 | 1231 | 0 | 0 | 0 | 0 | 0 | 0 | | | | 0 | 0 | 0 | | | |
| SOUTH | 20.8 | 24.4 | 0 | 0 | 0 | 0 | 0 | 0 | | 0 | 0 | 0 | 0 | 0 | 0 | 12 | 249 | 293 | 8 | 166 | 195 | | | | 0 | 0 | 0 | | | |
| WEST | 20.8 | 41.0 | 32 | 665 | 1314 | 12 | 249 | 493 | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | | 0 | 0 | 0 | | | |
| SKYLT. | 36.4 | 100.7 | 0 | 0 | 0 | 0 | 0 | 0 | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | | 0 | 0 | 0 | | | |
| DOORS | 24.7 | 3.7 | 0 | 0 | 0 | 0 | 0 | 0 | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | | 0 | 0 | 0 | | | |
| NET EXPOSED WALL | 4.4 | 0.6 | 308 | 1342 | 199 | 249 | 1085 | 161 | | 214 | 932 | 138 | 300 | 1307 | 194 | 87 | 379 | 56 | 82 | 357 | 53 | | | | 136 | 588 | 87 | | | |
| NET EXPOSED BSMT WALL ABOVE GR | 3.5 | 0.5 | 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 | 280 | 351 | 168 | 204 | 256 | 114 | | 166 | 207 | 92 | 196 | 244 | 109 | 220 | 276 | 123 | 176 | 221 | 98 | | | | 168 | 210 | 94 | | | |
| NO ATTIC EXPOSED CLG | 2.7 | 1.2 | 0 | 0 | 0 | 0 | 0 | 0 | | 0 | 0 | 0 | 40 | 107 | 48 | 0 | 0 | 0 | 0 | 0 | 0 | | | | 0 | 0 | 0 | | | |
| EXPOSED FLOOR | 2.5 | 0.4 | 0 | 0 | 0 | 0 | 0 | 0 | | 166 | 411 | 61 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | | 168 | 418 | 62 | | | |
| 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 | | | | 2358 | | | 1590 | | | | 1965 | | | 2282 | | | 904 | | | 744 | | | | | 1217 | | | | | |
| SUB TOTAL HT GAIN | | | | | 1669 | | | 767 | | | | 1112 | | | 1582 | | | 472 | | | 346 | | | | | | 243 | | | |
| LEVEL FACTOR / MULTIPLIER | | | 0.20 | 0.28 | | 0.20 | 0.28 | | | 0.20 | 0.28 | | 0.20 | 0.28 | | 0.20 | 0.28 | | 0.20 | 0.28 | | | | | 0.20 | 0.28 | | | | |
| AIR CHANGE HEAT LOSS | | | | 653 | | | 440 | | | | 544 | | | 632 | | | 250 | | | 206 | | | | | | 337 | | | | |
| AIR CHANGE HEAT GAIN | | | | | 133 | | | 61 | | | | 88 | | | 126 | | | 37 | | | 27 | | | | | | 19 | | | |
| DUCT LOSS | | | | 0 | | | 0 | | | | 251 | | | 0 | | | 0 | | | 0 | | | | | | 155 | | | | |
| DUCT GAIN | | | | | 0 | | | 0 | | | | 207 | | | 0 | | | 0 | | | 0 | | | | | | 26 | | | |
| HEAT GAIN PEOPLE | 240 | | 2 | | 480 | 0 | | 0 | | 1 | | 240 | 1 | | 240 | 1 | | 240 | 0 | | 0 | | | | 0 | | 0 | | | |
| HEAT GAIN APPLIANCES/LIGHTS | | | | | 627 | | | 627 | | | | 627 | | | 627 | | | 627 | | | 627 | | | | | | 0 | | | |
| TOTAL HT LOSS BTU/H | | | | 3010 | | | 2030 | | | | 2761 | | | 2914 | | | 1154 | | | 950 | | | | | 1709 | | | | | |
| TOTAL HT GAIN x 1.3 BTU/H | | | | | 3761 | | | 1892 | | | | 2957 | | | 3347 | | | 1789 | | | 1301 | | | | | | 375 | | | |

| ROOM USE | | | LIV | | | | KT/FM | | | | LAUN | | | WIR | | | FOY | | | MUD | | | | | WOD | | | BAS | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| EXP. WALL | | | 38 | | | | 78 | | | | 8 | | | 12 | | | 27 | | | 17 | | | | | 50 | | | 154 | | |
| CLG. HT. | | | 10 | | | | 10 | | | | 9 | | | 11 | | | 10 | | | 11 | | | | | 9 | | | 9 | | |
| | FACTORS | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| GRS.WALL AREA | LOSS | GAIN | 380 | | | | 780 | | | | 72 | | | 132 | | | 270 | | | 187 | | | | | 450 | | | 1224 | | |
| GLAZING | | | LOSS | | GAIN | | LOSS | | GAIN | | LOSS | | GAIN | LOSS | | GAIN | LOSS | | GAIN | LOSS | | GAIN | | | LOSS | | GAIN | LOSS | | GAIN |
| NORTH | 20.8 | 15.5 | 0 | 0 | 0 | | 0 | 0 | 0 | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | | 0 | 0 | 0 | 0 | 0 | 0 |
| EAST | 20.8 | 41.0 | 0 | 0 | 0 | | 0 | 0 | 0 | | 10 | 208 | 410 | 0 | 0 | 0 | 6 | 126 | 246 | 0 | 0 | 0 | | | 0 | 0 | 0 | 0 | 0 | 0 |
| SOUTH | 20.8 | 24.4 | 40 | 831 | 976 | | 0 | 0 | 0 | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | 0 | 0 | 0 | 8 | 166 | 195 |
| WEST | 20.8 | 41.0 | 0 | 0 | 0 | | 72 | 1496 | 2955 | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | 7 | 145 | 287 | 0 | 0 | 0 |
| SKYLT. | 36.4 | 100.7 | 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 | 24.7 | 3.7 | 0 | 0 | 0 | | 20 | 493 | 73 | | 0 | 0 | 0 | 0 | 0 | 0 | 40 | 986 | 146 | 20 | 493 | 73 | | | 0 | 0 | 0 | 20 | 493 | 73 |
| NET EXPOSED WALL | 4.4 | 0.6 | 340 | 1481 | 220 | | 688 | 2998 | 444 | | 62 | 270 | 40 | 132 | 575 | 85 | 224 | 976 | 145 | 167 | 728 | 108 | | | 0 | 0 | 0 | 0 | 0 | 0 |
| NET EXPOSED BSMT WALL ABOVE GR | 3.5 | 0.5 | 0 | 0 | 0 | | 0 | 0 | 0 | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | 293 | 1029 | 153 | 162 | 569 | 84 |
| EXPOSED CLG | 1.3 | 0.6 | 0 | 0 | 0 | | 0 | 0 | 0 | | 128 | 160 | 71 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | 0 | 0 | 0 | 0 | 0 | 0 |
| NO ATTIC EXPOSED CLG | 2.7 | 1.2 | 0 | 0 | 0 | | 36 | 97 | 43 | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | 0 | 0 | 0 | 0 | 0 | 0 |
| EXPOSED FLOOR | 2.5 | 0.4 | 0 | 0 | 0 | | 0 | 0 | 0 | | 128 | 319 | 47 | 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 | | | | | | | 5246 | | |
| SLAB ON GRADE HEAT LOSS | | | | 0 | | | | 0 | | | | 0 | | | 0 | | | 0 | | | 0 | | | | 0 | | | | | |
| SUBTOTAL HT LOSS | | | | 2312 | | | | 5083 | | | | 957 | | | 575 | | | 2087 | | | 1221 | | | | 1175 | | | 6474 | | |
| SUB TOTAL HT GAIN | | | | | 1196 | | | | 3516 | | | | 569 | | | 85 | | | 537 | | | 191 | | | | 440 | | | | 353 |
| LEVEL FACTOR / MULTIPLIER | | | 0.30 | 0.44 | | | 0.30 | 0.44 | | | 0.20 | 0.28 | | 0.30 | 0.44 | | 0.30 | 0.44 | | 0.30 | 0.44 | | | | | | | 0.80 | 1.09 | |
| AIR CHANGE HEAT LOSS | | | | 1023 | | | | 2249 | | | | 268 | | | 264 | | | 923 | | | 540 | | | | | | | 8316 | | |
| AIR CHANGE HEAT GAIN | | | | | 95 | | | | 279 | | | | 45 | | | 7 | | | 43 | | | 14 | | | | | | | | 63 |
| DUCT LOSS | | | | 0 | | | | 0 | | | | 122 | | | 0 | | | 0 | | | 0 | | | | | | | 0 | | |
| DUCT GAIN | | | | | 0 | | | | 0 | | | | 124 | | | 0 | | | 0 | | | 0 | | | | | | | | 0 |
| HEAT GAIN PEOPLE | 240 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | 0 | | 0 | 0 | | 0 | 0 | | 0 | | | 0 | | 0 | 0 | | 0 |
| HEAT GAIN APPLIANCES/LIGHTS | | | | | 627 | | | | 627 | | | | 627 | | | 0 | | | 0 | | | 627 | | | | | 0 | | | 0 |
| TOTAL HT LOSS BTU/H | | | | 3336 | | | | 7332 | | | | 1344 | | | 830 | | | 3010 | | | 1761 | | | | 1175 | | | 14791 | | |
| TOTAL HT GAIN x 1.3 BTU/H | | | | | 2493 | | | | 6749 | | | | 1776 | | | 120 | | | 754 | | | 1069 | | | | 572 | | | | 540 |

CITY OF BRAMPTON
BUILDING DIVISION
REVIEWED BY: S. HANNA
JAN 23 2019
ATTACHED NOTES ARE PART OF REVIEWED DRAWINGS
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TOTAL HEAT GAIN BTU/H: 29751 — TONS: 2.40 — LOSS DUE TO VENTILATION LOAD BTU/H: 1593 — STRUCTURAL HEAT LOSS: 48106 — TOTAL COMBINED HEAT LOSS BTU/H: 49698

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.

Michael O'Rourke

INDIVIDUAL BCIN: 19669 MICHAEL O'ROURKE

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SITE NAME: MINNISSALE HOMES CORP
BUILDER: GREENPARK HOMES

TYPE: MILLWOOD 2 DATE: Aug-18 GFA: 2654 LO# 79581

| | | | |
|---|---|---|---|
| HEATING CFM | 1131 | COOLING CFM | 1131 |
| TOTAL HEAT LOSS | 48,106 | TOTAL HEAT GAIN | 28,515 |
| AIR FLOW RATE CFM | 23.51 | AIR FLOW RATE CFM | 39.66 |

| | |
|---|---|
| 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 |

#GOODMAN
GMEC960603BNA 60
FAN SPEED
LOW
MEDLOW
MEDIUM
MEDIUM HIGH
HIGH 1131

AFUE = 96 %
INPUT (BTU/H) = 60,000
OUTPUT (BTU/H) = 57,600
DESIGN CFM = 1131
CFM @ .6 " E.S.P.
TEMPERATURE RISE 47 °F

| RUN COUNT | 4th | 3rd | 2nd | 1st | Bas |
|---|---|---|---|---|---|
| S/A | 0 | 0 | 11 | 7 | 4 |
| R/A | 0 | 0 | 4 | 2 | 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 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ROOM NAME | MBR | ENS | BED-2 | BED-3 | BED-4 | BATH | BED-2 | BED-3 | MBR | ENS-2 | LIV | KT/FM | KT/FM | KT/FM | LAUN | WIR | FOY | MUD | BAS | BAS | BAS | BAS |
| RM LOSS MBH | 1.51 | 2.03 | 1.38 | 1.46 | 1.15 | 0.95 | 1.38 | 1.46 | 1.51 | 1.71 | 3.34 | 2.44 | 2.44 | 2.44 | 1.34 | 0.83 | 3.01 | 1.76 | 3.99 | 3.99 | 3.99 | 3.99 |
| CFM PER RUN HEAT | 35 | 48 | 32 | 34 | 27 | 22 | 32 | 34 | 35 | 40 | 78 | 57 | 57 | 57 | 32 | 20 | 71 | 41 | 94 | 94 | 94 | 94 |
| RM GAIN MBH | 1.89 | 1.89 | 1.48 | 1.67 | 1.79 | 1.30 | 1.48 | 1.67 | 1.89 | 0.37 | 2.49 | 1.92 | 1.92 | 1.92 | 1.78 | 0.12 | 0.75 | 1.07 | 0.28 | 0.28 | 0.28 | 0.28 |
| CFM PER RUN COOLING | 75 | 75 | 59 | 66 | 71 | 52 | 59 | 66 | 75 | 15 | 99 | 76 | 76 | 76 | 70 | 5 | 30 | 42 | 11 | 11 | 11 | 11 |
| ADJUSTED PRESSURE | 0.17 | 0.17 | 0.17 | 0.17 | 0.17 | 0.17 | 0.17 | 0.17 | 0.17 | 0.17 | 0.16 | 0.17 | 0.17 | 0.17 | 0.17 | 0.17 | 0.17 | 0.17 | 0.16 | 0.16 | 0.16 | 0.16 |
| ACTUAL DUCT LGH. | 55 | 54 | 46 | 33 | 15 | 37 | 47 | 47 | 45 | 38 | 15 | 48 | 44 | 49 | 39 | 39 | 29 | 32 | 39 | 39 | 20 | 10 |
| EQUIVALENT LENGTH | 190 | 160 | 140 | 140 | 160 | 110 | 140 | 160 | 150 | 140 | 120 | 130 | 110 | 140 | 130 | 140 | 90 | 160 | 150 | 160 | 110 | 150 |
| TOTAL EFFECTIVE LENGTH | 245 | 214 | 186 | 173 | 175 | 147 | 187 | 207 | 195 | 178 | 135 | 178 | 154 | 189 | 169 | 179 | 119 | 192 | 189 | 199 | 130 | 160 |
| ADJUSTED PRESSURE | 0.07 | 0.08 | 0.09 | 0.1 | 0.1 | 0.12 | 0.09 | 0.08 | 0.09 | 0.1 | 0.12 | 0.1 | 0.11 | 0.09 | 0.1 | 0.1 | 0.14 | 0.09 | 0.09 | 0.08 | 0.12 | 0.1 |
| ROUND DUCT SIZE | 6 | 6 | 5 | 5 | 5 | 4 | 5 | 5 | 5 | 4 | 6 | 5 | 5 | 5 | 5 | 4 | 5 | 4 | 6 | 6 | 6 | 6 |
| HEATING VELOCITY (ft/min) | 178 | 245 | 235 | 250 | 198 | 252 | 235 | 250 | 257 | 459 | 398 | 419 | 419 | 419 | 235 | 229 | 521 | 470 | 479 | 479 | 479 | 479 |
| COOLING VELOCITY (ft/min) | 382 | 382 | 433 | 485 | 521 | 597 | 433 | 485 | 551 | 172 | 505 | 558 | 558 | 558 | 514 | 57 | 220 | 482 | 56 | 56 | 56 | 56 |
| OUTLET GRILL SIZE | 4X10 | 4X10 | 3X10 | 3X10 | 3X10 | 3X10 | 3X10 | 3X10 | 3X10 | 3X10 | 4X10 | 3X10 | 3X10 | 3X10 | 3X10 | 3X10 | 3X10 | 3X10 | 4X10 | 4X10 | 4X10 | 4X10 |
| TRUNK | A | B | D | C | B | D | D | C | A | D | C | A | A | A | D | B | C | B | A | A | C | B |

| RUN # | |
|---|---|
| ROOM NAME | |
| RM LOSS MBH | |
| CFM PER RUN HEAT | |
| RM GAIN MBH | |
| CFM PER RUN COOLING | |
| ADJUSTED PRESSURE | |
| ACTUAL DUCT LGH. | |
| EQUIVALENT LENGTH | |
| TOTAL EFFECTIVE LENGTH | |
| ADJUSTED PRESSURE | |
| ROUND DUCT SIZE | |
| HEATING VELOCITY (ft/min) | |
| COOLING VELOCITY (ft/min) | |
| OUTLET GRILL SIZE | |
| TRUNK | |

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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 | 429 | 0.07 | 10.6 | 14 | x | 8 | 552 | TRUNK G | 0 | 0.00 | 0 | 0 | x | 8 | 0 |
| TRUNK B | 659 | 0.07 | 12.4 | 18 | x | 8 | 659 | TRUNK H | 0 | 0.00 | 0 | 0 | x | 8 | 0 |
| TRUNK C | 311 | 0.08 | 9.1 | 10 | x | 8 | 560 | TRUNK I | 0 | 0.00 | 0 | 0 | x | 8 | 0 |
| TRUNK D | 469 | 0.08 | 10.6 | 14 | x | 8 | 603 | TRUNK J | 0 | 0.00 | 0 | 0 | x | 8 | 0 |
| TRUNK E | 0 | 0.00 | 0 | 0 | x | 8 | 0 | 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 | 0.07 | 0 | 0 | x | 8 | 0 |
| TRUNK P | 0 | 0.07 | 0 | 0 | x | 8 | 0 |
| TRUNK Q | 0 | 0.07 | 0 | 0 | x | 8 | 0 |
| TRUNK R | 0 | 0.07 | 0 | 0 | x | 8 | 0 |
| TRUNK S | 0 | 0.07 | 0 | 0 | x | 8 | 0 |
| TRUNK T | 0 | 0.07 | 0 | 0 | x | 8 | 0 |
| TRUNK U | 0 | 0.07 | 0 | 0 | x | 8 | 0 |
| TRUNK V | 0 | 0.07 | 0 | 0 | x | 8 | 0 |
| TRUNK W | 0 | 0.07 | 0 | 0 | x | 8 | 0 |
| TRUNK X | 1131 | 0.07 | 15.2 | 30 | x | 8 | 679 |
| TRUNK Y | 290 | 0.07 | 9.1 | 10 | x | 8 | 522 |
| TRUNK Z | 0 | 0.07 | 0 | 0 | x | 8 | 0 |
| DROP | 1131 | 0.07 | 15.2 | 24 | x | 10 | 679 |

| RETURN AIR # | 1 | 2 | 3 | 4 | 5 | 6 | | | | | | | | | | BR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| AIR VOLUME | 155 | 155 | 95 | 95 | 135 | 310 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 186 |
| 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. | 58 | 43 | 42 | 48 | 38 | 15 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 17 |
| EQUIVALENT LENGTH | 150 | 135 | 175 | 175 | 145 | 135 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 145 |
| TOTAL EFFECTIVE LH | 208 | 178 | 217 | 223 | 183 | 150 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 162 |
| ADJUSTED PRESSURE | 0.07 | 0.08 | 0.07 | 0.07 | 0.08 | 0.10 | 14.80 | 14.80 | 14.80 | 14.80 | 14.80 | 14.80 | 14.80 | 14.80 | 14.80 | 0.09 |
| ROUND DUCT SIZE | 7.2 | 7 | 6 | 6 | 6.6 | 8.6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 7.3 |
| INLET GRILL SIZE | 8 | 8 | 8 | 8 | 8 | 8 | 0 | 0 | 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 | 30 | 0 | 0 | 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.

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

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TYPE: MILLWOOD 2 LO # 79581
SITE NAME: MINNISSALE HOMES CORP

# 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 3.0 sones [✓] HVI Approved

**PRINCIPAL EXHAUST HEAT LOSS CALCULATION**

| CFM | | ΔT °F | | FACTOR | | % LOSS |
|---|---|---|---|---|---|---|
| 79.5 CFM | X | 74 F | X | 1.08 | X | 0.25 |

**SUPPLEMENTAL FANS** PANASONIC

| Location | Model | cfm | HVI | Sones |
|---|---|---|---|---|
| ENS | FV-05-11VK1 | 50 | ✓ | 0.3 |
| BATH | FV-05-11VK1 | 50 | ✓ | 0.3 |
| ENS-2 | FV-05-11VK1 | 50 | ✓ | 0.3 |
| WIR | FV-05-11VK1 | 50 | ✓ | 0.3 |

**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:** GREENPARK HOMES

Name:

Address:

City:

Telephone #: Fax #:

**INSTALLING CONTRACTOR**

Name:

Address:

City:

Telephone #: Fax #:

CITY OF BRAMPTON
BUILDING DIVISION
REVIEWED BY: S. SANNA
JAN 23 2019
ATTACHED NOTES ARE PART OF REVIEWED DRAWINGS
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**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 # 001620

Date: August-18

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

# CSA F280-12 Residential Heat Loss and Heat Gain Calculations

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

LO#: 79581 Model: MILLWOOD 2 Builder: GREENPARK HOMES Date: 8/8/2018

### Volume Calculation

**House Volume**

| Level | Floor Area ($ft^2$) | Floor Height (ft) | Volume ($ft^3$) |
|---|---|---|---|
| Bsmt | 1148 | 9 | 10332 |
| First | 1148 | 10 | 11480 |
| Second | 1506 | 9 | 13554 |
| Third | 0 | 9 | 0 |
| Fourth | 0 | 9 | 0 |
| | | Total: | 35,366.0 $ft^3$ |
| | | Total: | 1001.5 $m^3$ |

### Air Change & Delta T Data

| | |
|---|---|
| WINTER NATURAL AIR CHANGE RATE | 0.354 |
| SUMMER NATURAL AIR CHANGE RATE | 0.115 |

**Design Temperature Difference**

| | Tin °C | Tout °C | ΔT °C | ΔT °F |
|---|---|---|---|---|
| Winter DTDh | 22 | -19 | 41 | 74 |
| Summer DTDc | 24 | 30 | 6 | 11 |

### 5.2.3.1 Heat Loss due to Air Leakage

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

0.354 x 278.18 x 41 °C x 1.2 = 4875 W

= 16633 Btu/h

### 6.2.6 Sensible Gain due to Air Leakage

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

= 0.115 x 278.18 x 6 °C x 1.2 = 235 W

= 802 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 74 °F x 1.08 x 0.25 = 1593 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 11 °F x 1.08 x 0.25 = 236 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 | 16,633 | 7,649 | 1.087 |
| 2 | 0.3 | | 11,278 | 0.442 |
| 3 | 0.2 | | 12,017 | 0.277 |
| 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

CITY OF BRAMPTON
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375 Finley Ave. Suite 202 Ajax, ON L1S 2E2
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# HEAT LOSS AND GAIN SUMMARY SHEET

**MODEL:** MILLWOOD 2 **BUILDER:** GREENPARK HOMES
**SFQT:** 2654 **LO#** 79581 **SITE:** MINNISSALE HOMES CORP

## DESIGN ASSUMPTIONS

| | | | |
|---|---|---|---|
| HEATING | °F | COOLING | °F |
| OUTDOOR DESIGN TEMP. | -2 | OUTDOOR DESIGN TEMP. | 86 |
| 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: | 3.57 | ASSUMED (Y/N): | Y |
| AIR TIGHTNESS CATEGORY: | AVERAGE | ASSUMED (Y/N): | Y |
| WIND EXPOSURE: | SHELTERED | ASSUMED (Y/N): | Y |
| HOUSE VOLUME ($ft^3$): | 35366.0 | ASSUMED (Y/N): | Y |
| INTERNAL SHADING: | BLINDS/CURTAINS | ASSUMED OCCUPANTS: | 5 |
| INTERIOR LIGHTING LOAD (Btu/h/$ft^2$): | 1.65 | DC BRUSHLESS MOTOR (Y/N): | Y |
| FOUNDATION CONFIGURATION | BCIN_1 | DEPTH BELOW GRADE: | 6.0 ft |
| LENGTH: 46.0 ft | WIDTH: 31.0 ft | EXPOSED PERIMETER: | 154.0 ft |

| 2012 OBC - COMPLIANCE PACKAGE<br>Component | Compliance Package A1 | |
|---|---|---|
| | Nominal | Min. Eff. |
| Ceiling with Attic Space Minimum RSI (R)-Value | 60 | 59.22 |
| Ceiling Without Attic Space Minimum RSI (R)-Value | 31 | 27.65 |
| Exposed Floor Minimum RSI (R)-Value | 31 | 29.80 |
| Walls Above Grade Minimum RSI (R)-Value | 22 | 17.03 |
| Basement Walls Minimum RSI (R)-Value | 20 ci | 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 | 0.28 | - |
| Skylights Maximum U-Value | 0.49 | - |
| Space Heating Equipment Minimum AFUE | 0.96 | - |
| HRV Minimum Efficiency | 75% | - |
| Domestic Hot Water Heater Minimum EF | 0.8 | - |

CITY OF BRAMPTON
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JAN 23 2019
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INDIVIDUAL BCIN: 19669
MICHAEL O'ROURKE

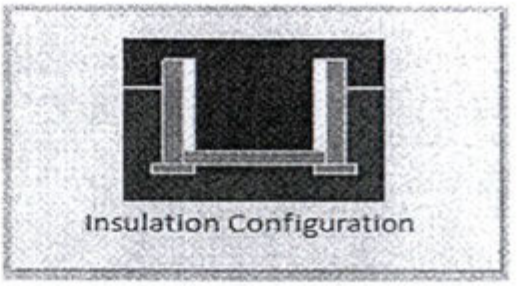
Michael O'Rourke

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: | Brampton |
| **Site Description** | |
| Soil Conductivity: | Normal conductivity: dry sand, loam, clay |
| Water Table: | Normal (7-10 m, 23-33 ft) |

| Foundation Dimensions | | |
|---|---|---|
| Floor Length (m): | 14.0 |  Insulation Configuration |
| Floor Width (m): | 9.4 | |
| Exposed Perimeter (m): | 0.0 | |
| Wall Height (m): | 2.7 | |
| Depth Below Grade (m): | 1.83 | |
| Window Area ($m^2$): | 1.4 | |
| 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):** | **1537** | |

**TYPE:** MILLWOOD 2
**LO#** 79581

CITY OF BRAMPTON
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JAN 2 3 2019
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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: | Brampton | | | | |
| Weather Station Location: | Open flat terrain, grass | | | | |
| Anemometer height (m): | 10 | | | | |
| **Local Shielding** | | | | | |
| Building Site: | Suburban, forest | | | | |
| Walls: | Heavy | | | | |
| Flue: | Heavy | | | | |
| Highest Ceiling Height (m): | 7.62 | | | | |
| **Building Configuration** | | | | | |
| Type: | Detached | | | | |
| Number of Stories: | Two | | | | |
| Foundation: | Full | | | | |
| House Volume ($m^3$): | 1001.5 | | | | |
| **Air Leakage/Ventilation** | | | | | |
| Air Tightness Type: | Present (1961-) (3.57 ACH) | | | | |
| Custom BDT Data: | ELA @ 10 Pa. | | | | 1335.0 $cm^2$ |
| | 3.57 | | | | ACH @ 50 Pa |
| Mechanical Ventilation (L/s): | Total Supply | | | Total Exhaust | |
| | 37.5 | | | 37.5 | |
| **Flue Size** | | | | | |
| Flue #: | #1 | #2 | #3 | #4 | |
| Diameter (mm): | 0 | 0 | 0 | 0 | |
| **Natural Infiltration Rates** | | | | | |
| **Heating Air Leakage Rate (ACH/H):** | **0.354** | | | | |
| **Cooling Air Leakage Rate (ACH/H):** | **0.115** | | | | |

**TYPE:** MILLWOOD 2
**LO#** 79581

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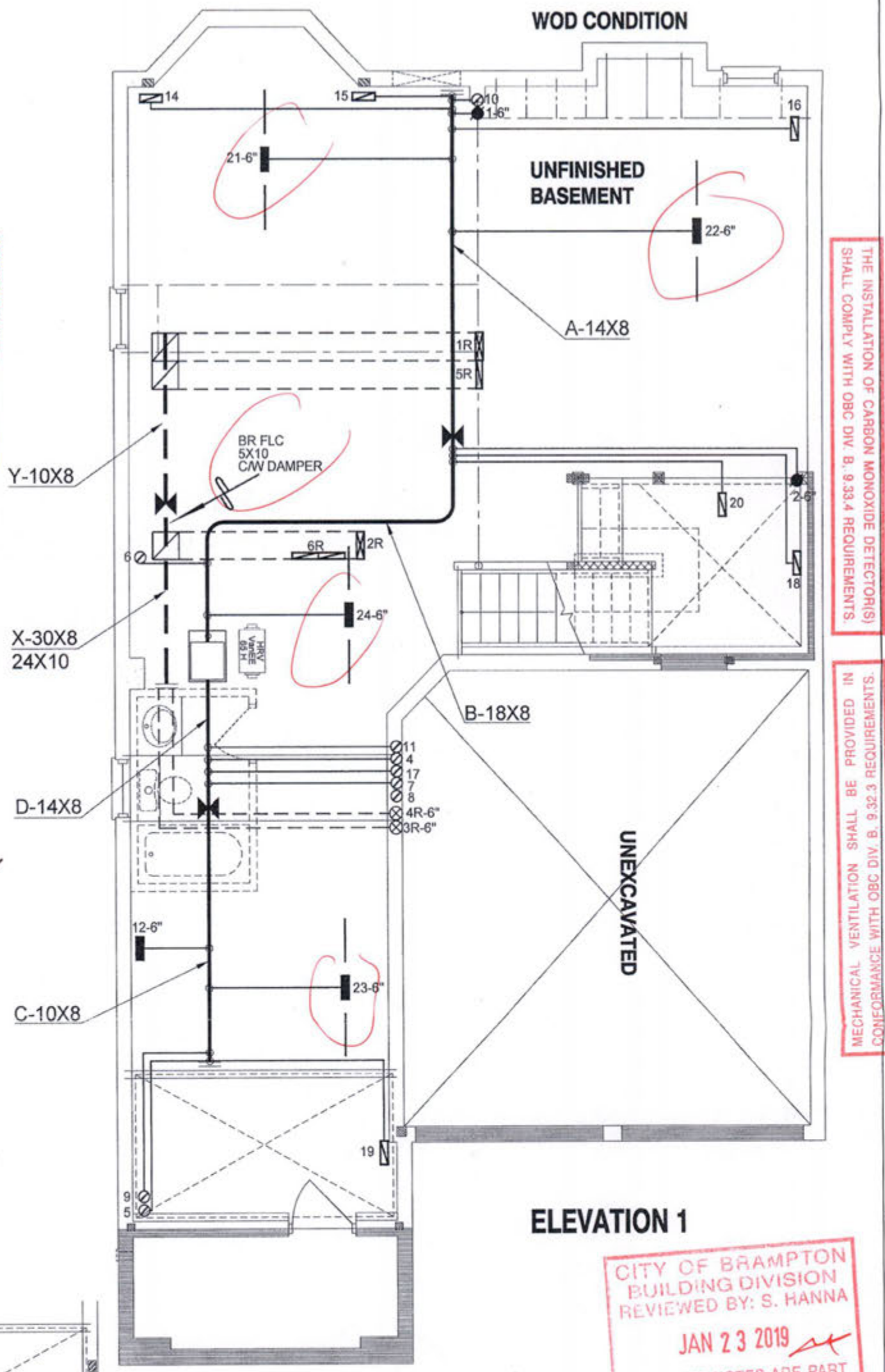
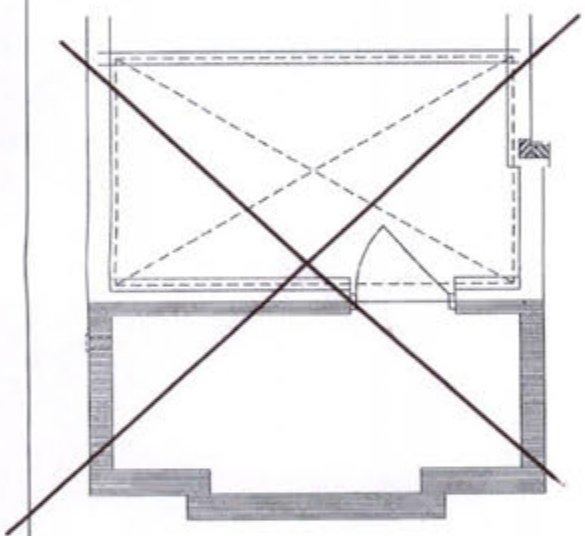
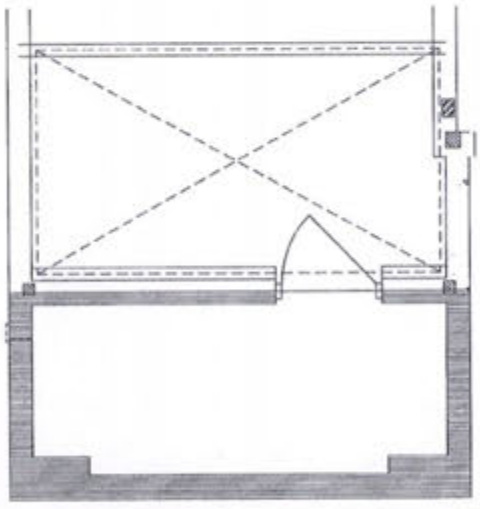
ENSURE THAT MIN THERMAL PERFORMANCE OF BLDG ENVELOPE AND EQUIPMENT SHALL CONFORM TO OBC SB-12, 3.1.1.2 TABLES REQUIREMENTS.
FURNACE SHALL BE EQUIPPED WITH BRUSHLESS DIRECT CURRENT MOTOR OBC DIV B 12.3.1.5.
SEAL ALL DUCTWORK WITHIN UNCONDITIONED SPACE or OUTDOORS PER OBC DIV B6.2.4.3(11) REQUIREMENTS. SEAL ALL SUPPLY DUCTS LOCATED IN CONDITIONED SPACE IN COMPLIANCE WITH OBC DIV B6.2.4.3(12) REQUIREMENTS.
SEPARATE ANY INTAKES FROM BUILDING ENVELOPE PENETRATIONS THAT ARE POTENTIAL SOURCES OF CONTAMINANTS (GAS VENTS, OIL FILL PIPES, etc. BY MIN 900mm (2FT 11IN) – OBC Div B 9.32.3.12.
INSTALLATION OF KITCHEN EXHAUST DUCT LARGER THAN 6"dia SHALL BE PRECEDED BY APPLICATION FOR REVISION OF DESIGN PER OBC PART 6 REQUIREMENTS.
EXHAUST FAN SHALL DISCHARGE DIRECTLY TO OUTSIDE. CLOTHES DRYER EXHAUST SYSTEM SHALL COMPLY WITH OBC DIV B 9.32.1.2, 9.32.1.3 & 9.32.3 REQ'S. BALANCE THE RETURN AIRFLOW ON THE UPPER FLOOR TO MATCH THE SUPPLY.
WHEN HRV IS USED AS PRINCIPAL EXHAUST FAN, THE CONTROLLER SHALL BE WIRED TO THE HRV UNIT AND INTERCONNECTED TO THE FURNACE FAN. THE FURNACE BLOWER MUST BE IN OPERATION WHEN THE HRV IS IN OPERATION.
INSTALL ADDITIONAL S/A REGISTER AS REQUIRED IN ORDER TO ENSURE MIN 72degF – OBC DIV B 9.33.3.1(1).
UNDERCUT BY MIN 1" THE DOOR TO ANY ROOM WITHOUT RETURN AIR GRILLE.
ENSURE RETURN AIR INTAKE SHALL BE CONNECTED TO THE MAIN R/A DUCT AT A HORIZONTAL DISTANCE OF MIN 6FT FROM THE CASING OF THE UNIT (HRAI DIGEST).




ELEVATION 1



ELEVATION 2



ELEVATION 3

THE INSTALLATION OF CARBON MONOXIDE DETECTOR(S) SHALL COMPLY WITH OBC DIV. B. 9.33.4 REQUIREMENTS.

MECHANICAL VENTILATION SHALL BE PROVIDED IN CONFORMANCE WITH OBC DIV. B. 9.32.3 REQUIREMENTS.

CITY OF BRAMPTON
BUILDING DIVISION
REVIEWED BY: S. HANNA
JAN 2 3 2019
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INSTALLATION OF HVAC EQUIPMENTS SHALL CONFORM TO MANUFACTURER'S SPECIFICATIONS AND MANUALS

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
Michael O'Rourke, BCIN# 19669
HVAC DESIGNS LTD

CSA-F280-12
PACKAGE A1

HVAC LEGEND

| SYMBOL | DESCRIPTION | SYMBOL | DESCRIPTION | SYMBOL | DESCRIPTION | SYMBOL | DESCRIPTION |
|---|---|---|---|---|---|---|---|
| — ▭ — | FLOOR SUPPLY AIR GRILLE | ▬ | 6" SUPPLY AIR BOOT ABOVE | ▭ | 14"x8" RETURN AIR GRILLE | ▭ | RETURN AIR STACK ABOVE |
| — ▬ — | FLOOR 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. | | |
| 2. | | |
| 1. | | |
| REVISIONS | | |

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Client
GREENPARK HOMES

Project Name
MINNISALE HOMES CORP.
BRAMPTON, ONTARIO
LOT 28
MILLWOOD 2 2654 sqft

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375 Finley Ave. Suite 202 - Ajax, Ontario
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Specializing in Residential Mechanical Design Services

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.

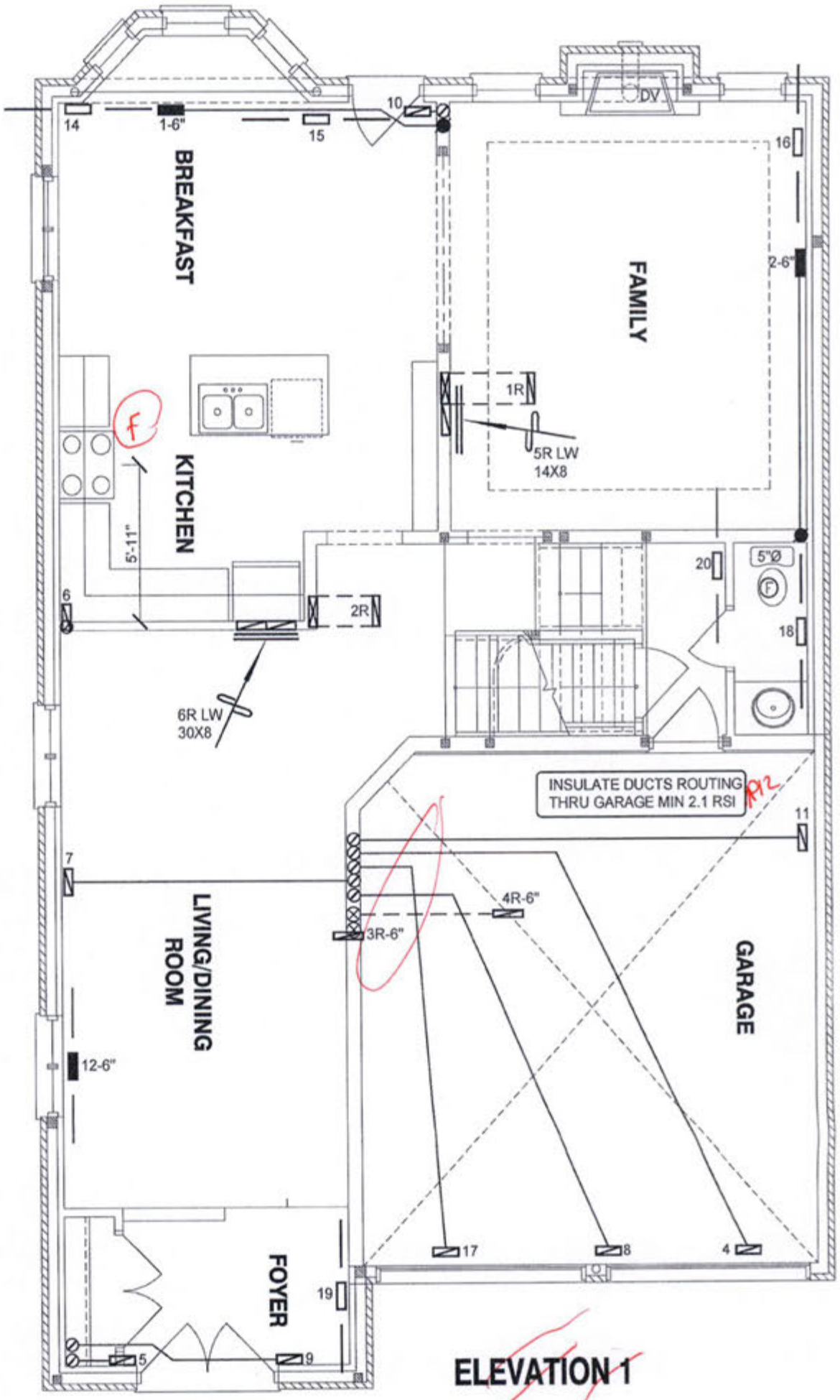
| HEAT LOSS 49698 BTU/H | |
|---|---|
| UNIT DATA | |
| MAKE | GOODMAN |
| MODEL | GMEC960603BNA-60 |
| INPUT | 60 MBTU/H |
| OUTPUT | 57.6 MBTU/H |
| COOLING | 2.5 TONS |
| FAN SPEED | 1131 cfm @ 0.6" w.c. |

| # OF RUNS | S/A | R/A | FANS |
|---|---|---|---|
| 3RD FLOOR | | | |
| 2ND FLOOR | 11 | 4 | 3 |
| 1ST FLOOR | 7 | 2 | 2 |
| BASEMENT | 4 | 1 | 0 |

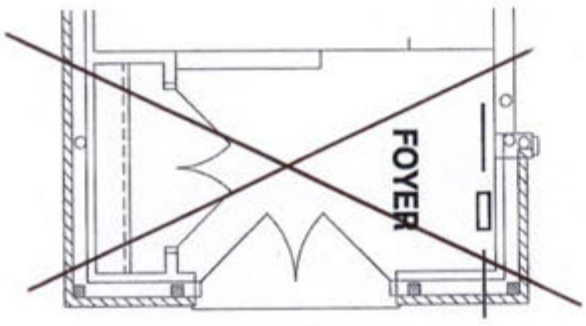
ALL S/A DIFFUSERS 4 "x10" UNLESS NOTED OTHERWISE ON LAYOUT. ALL S/A RUNS 5"Ø UNLESS NOTED OTHERWISE ON LAYOUT. UNDERCUT DOORS 1" min. FOR R/A

Sheet Title
BASEMENT HEATING LAYOUT

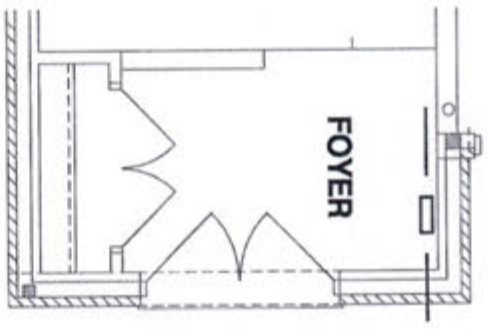
Date AUG/2018
Scale 3/16" = 1'-0"
BCIN# 19669
LO# 79581




ELEVATION 1




ELEVATION 2




ELEVATION 3

THIS INSTALLATION OF A GAS FIREPLACE IS REGULATED UNDER THE T.S.S.A. BY C.S.A. B149.1 NATURAL GAS AND PROPANE INSTALLATION CODE CALL ENBRIDGE FOR INSPECTION AT 1-800-783-1314

CITY OF BRAMPTON
BUILDING DIVISION
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JAN 23 2019
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HVAC DESIGNS LTD

CSA-F280-12
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HVAC LEGEND

| SYMBOL | DESCRIPTION | SYMBOL | DESCRIPTION | SYMBOL | DESCRIPTION | SYMBOL | DESCRIPTION |
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| No. | Description | Date |
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Project Name
MINNISALE HOMES CORP.
BRAMPTON, ONTARIO

LOT 28

MILLWOOD 2 2654 sqft

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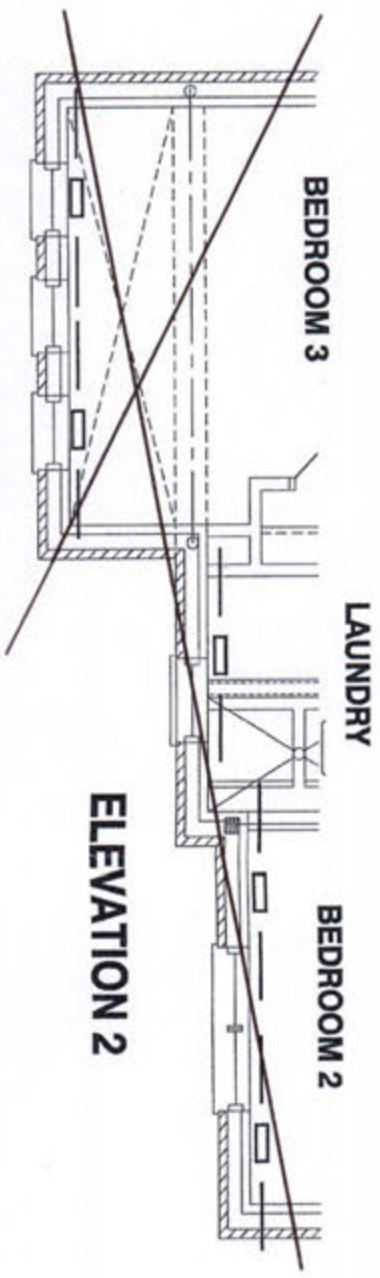
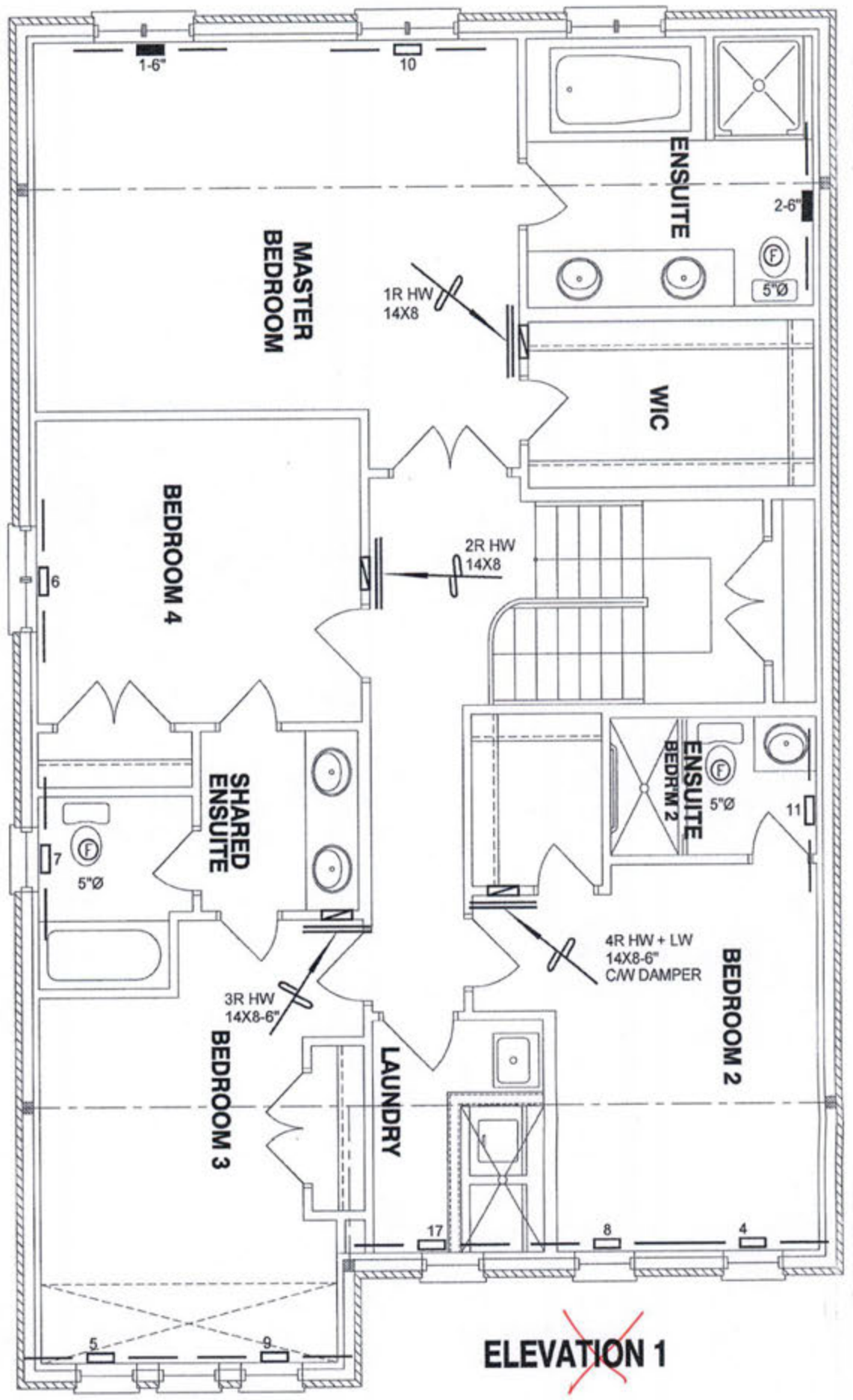
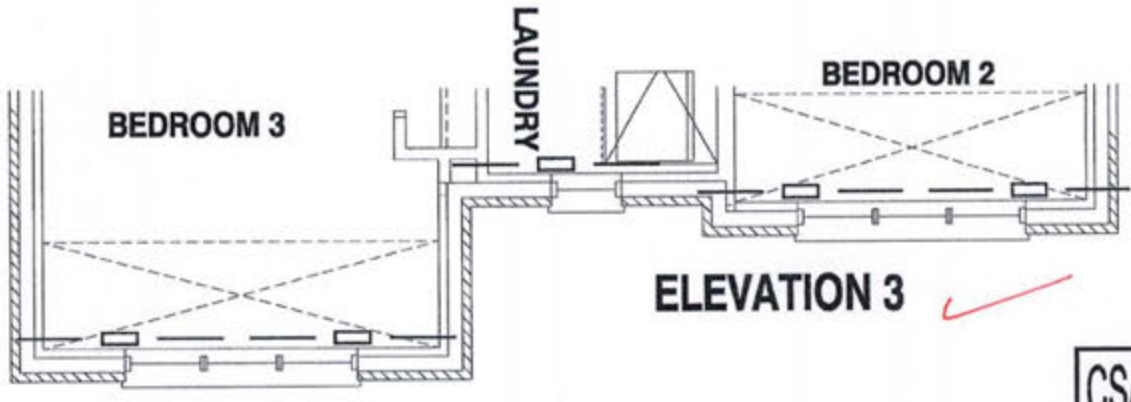
Sheet Title
FIRST FLOOR HEATING LAYOUT

Date AUG/2018
Scale 3/16" = 1'-0"
BCIN# 19669
LO# 79581

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|---|---|---|
| 3. | | |
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REVISIONS

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Client
GREENPARK HOMES

Project Name
MINNISALE HOMES CORP.
BRAMPTON, ONTARIO
LOT 28
MILLWOOD 2 2654 sqft

HVAC DESIGNS LTD.
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Web: www.hvacdesigns.ca
Specializing in Residential Mechanical Design Services

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 AUG/2018
Scale 3/16" = 1'-0"
BCIN# 19669
LO# 79581