

|                                |      |       |      |                     |      |      |      |              |   |   |   |                                      |   |   |   |                     |   |   |   |                  |   |   |   |
|--------------------------------|------|-------|------|---------------------|------|------|------|--------------|---|---|---|--------------------------------------|---|---|---|---------------------|---|---|---|------------------|---|---|---|
| SITE NAME: RUSSEL GARDENS PH 4 |      |       |      | WOB                 |      |      |      | DATE: Jul-21 |   |   |   | WINTER NATURAL AIR CHANGE RATE 0.365 |   |   |   | HEAT LOSS AT °F. 71 |   |   |   | CSA-F280-12      |   |   |   |
| BUILDER: GREENPARK HOMES       |      |       |      | TYPE: SPRINGFIELD 3 |      |      |      | LO# 91951    |   |   |   | SUMMER NATURAL AIR CHANGE RATE 0.130 |   |   |   | HEAT GAIN AT °F. 13 |   |   |   | SB-12 PACKAGE A1 |   |   |   |
| ROOM USE                       |      |       |      |                     |      |      |      |              |   |   |   |                                      |   |   |   |                     |   |   |   |                  |   |   |   |
| EXP. WALL                      |      |       |      |                     |      |      |      |              |   |   |   |                                      |   |   |   |                     |   |   |   |                  |   |   |   |
| CLG. HT.                       |      |       |      |                     |      |      |      |              |   |   |   |                                      |   |   |   |                     |   |   |   |                  |   |   |   |
| FACTORS                        |      |       |      |                     |      |      |      |              |   |   |   |                                      |   |   |   |                     |   |   |   |                  |   |   |   |
| GRS.WALL AREA                  | LOSS | GAIN  |      |                     |      |      |      |              |   |   |   |                                      |   |   |   |                     |   |   |   |                  |   |   |   |
| GLAZING                        |      |       |      |                     |      |      |      |              |   |   |   |                                      |   |   |   |                     |   |   |   |                  |   |   |   |
| NORTH                          | 19.8 | 16.0  | 0    | 0                   | 0    | 0    | 0    | 0            | 0 | 0 | 0 | 0                                    | 0 | 0 | 0 | 0                   | 0 | 0 | 0 | 0                | 0 | 0 | 0 |
| EAST                           | 19.8 | 41.6  | 0    | 0                   | 0    | 0    | 0    | 0            | 0 | 0 | 0 | 0                                    | 0 | 0 | 0 | 0                   | 0 | 0 | 0 | 0                | 0 | 0 | 0 |
| SOUTH                          | 19.8 | 24.9  | 0    | 0                   | 0    | 0    | 0    | 0            | 0 | 0 | 0 | 0                                    | 0 | 0 | 0 | 0                   | 0 | 0 | 0 | 0                | 0 | 0 | 0 |
| WEST                           | 19.8 | 41.6  | 32   | 633                 | 1330 | 31   | 613  | 1288         |   |   |   |                                      |   |   |   |                     |   |   |   |                  |   |   |   |
| SKYLT.                         | 34.6 | 101.5 | 0    | 0                   | 0    | 0    | 0    | 0            | 0 | 0 | 0 | 0                                    | 0 | 0 | 0 | 0                   | 0 | 0 | 0 | 0                | 0 | 0 | 0 |
| DOORS                          | 23.5 | 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               | 4.1  | 0.8   | 346  | 1434                | 260  | 239  | 591  | 180          |   |   |   |                                      |   |   |   |                     |   |   |   |                  |   |   |   |
| NET EXPOSED BSMT WALL ABOVE GR | 3.3  | 0.6   | 0    | 0                   | 0    | 0    | 0    | 0            |   |   |   |                                      |   |   |   |                     |   |   |   |                  |   |   |   |
| EXPOSED CLG                    | 1.2  | 0.6   | 398  | 474                 | 234  | 221  | 263  | 130          |   |   |   |                                      |   |   |   |                     |   |   |   |                  |   |   |   |
| NO ATTIC EXPOSED CLG           | 2.6  | 1.3   | 0    | 0                   | 0    | 0    | 0    | 0            |   |   |   |                                      |   |   |   |                     |   |   |   |                  |   |   |   |
| EXPOSED FLOOR                  | 2.4  | 0.4   | 0    | 0                   | 0    | 0    | 0    | 0            |   |   |   |                                      |   |   |   |                     |   |   |   |                  |   |   |   |
| BASEMENT/CRAWL HEAT LOSS       |      |       | 0    |                     |      |      |      |              |   |   |   |                                      |   |   |   |                     |   |   |   |                  |   |   |   |
| SLAB ON GRADE HEAT LOSS        |      |       | 0    |                     |      |      |      |              |   |   |   |                                      |   |   |   |                     |   |   |   |                  |   |   |   |
| SUBTOTAL HT LOSS               |      |       | 2541 |                     |      | 1867 |      |              |   |   |   |                                      |   |   |   |                     |   |   |   |                  |   |   |   |
| SUB TOTAL HT GAIN              |      |       |      |                     |      |      |      |              |   |   |   |                                      |   |   |   |                     |   |   |   |                  |   |   |   |
| LEVEL FACTOR / MULTIPLIER      | 0.20 | 0.31  |      |                     |      | 0.20 | 0.31 |              |   |   |   |                                      |   |   |   |                     |   |   |   |                  |   |   |   |
| AIR CHANGE HEAT LOSS           |      |       | 783  |                     |      | 575  |      |              |   |   |   |                                      |   |   |   |                     |   |   |   |                  |   |   |   |
| AIR CHANGE HEAT GAIN           |      |       | 123  |                     |      | 108  |      |              |   |   |   |                                      |   |   |   |                     |   |   |   |                  |   |   |   |
| DUCT LOSS                      |      |       | 0    |                     |      | 0    |      |              |   |   |   |                                      |   |   |   |                     |   |   |   |                  |   |   |   |
| DUCT GAIN                      |      |       | 0    |                     |      | 0    |      |              |   |   |   |                                      |   |   |   |                     |   |   |   |                  |   |   |   |
| HEAT GAIN PEOPLE               | 240  | 2     | 480  | 0                   | 0    | 0    | 0    | 0            |   |   |   |                                      |   |   |   |                     |   |   |   |                  |   |   |   |
| HEAT GAIN APPLIANCES/LIGHTS    |      |       | 566  |                     |      | 0    |      |              |   |   |   |                                      |   |   |   |                     |   |   |   |                  |   |   |   |
| TOTAL HT LOSS BTU/H            |      |       | 3326 |                     |      | 2443 |      |              |   |   |   |                                      |   |   |   |                     |   |   |   |                  |   |   |   |
| TOTAL HT GAIN x 1.3 BTU/H      |      |       | 3691 |                     |      | 2217 |      |              |   |   |   |                                      |   |   |   |                     |   |   |   |                  |   |   |   |

|                                |      |       |      |      |      |      |      |     |      |      |      |      |      |     |      |      |   |      |      |    |      |      |     |
|--------------------------------|------|-------|------|------|------|------|------|-----|------|------|------|------|------|-----|------|------|---|------|------|----|------|------|-----|
| ROOM USE                       |      |       |      |      |      |      |      |     |      |      |      |      |      |     |      |      |   |      |      |    |      |      |     |
| EXP. WALL                      |      |       |      |      |      |      |      |     |      |      |      |      |      |     |      |      |   |      |      |    |      |      |     |
| CLG. HT.                       |      |       |      |      |      |      |      |     |      |      |      |      |      |     |      |      |   |      |      |    |      |      |     |
| FACTORS                        |      |       |      |      |      |      |      |     |      |      |      |      |      |     |      |      |   |      |      |    |      |      |     |
| GRS.WALL AREA                  | LOSS | GAIN  |      |      |      |      |      |     |      |      |      |      |      |     |      |      |   |      |      |    |      |      |     |
| GLAZING                        |      |       |      |      |      |      |      |     |      |      |      |      |      |     |      |      |   |      |      |    |      |      |     |
| NORTH                          | 19.8 | 16.0  | 0    | 0    | 0    | 0    | 0    | 0   | 0    | 0    | 0    | 0    | 0    | 0   | 0    | 0    | 0 | 0    | 0    | 0  | 0    | 0    | 0   |
| EAST                           | 19.8 | 41.6  | 0    | 0    | 0    | 0    | 0    | 0   | 0    | 0    | 0    | 0    | 0    | 0   | 0    | 0    | 0 | 0    | 0    | 0  | 0    | 0    | 0   |
| SOUTH                          | 19.8 | 24.9  | 0    | 0    | 0    | 36   | 712  | 896 | 0    | 0    | 0    | 0    | 0    | 0   | 0    | 0    | 0 | 0    | 0    | 0  | 0    | 0    | 0   |
| WEST                           | 19.8 | 41.6  | 40   | 791  | 1662 | 0    | 0    | 0   | 65   | 1285 | 2701 | 0    | 0    | 0   | 0    | 0    | 0 | 0    | 0    | 0  | 0    | 0    | 0   |
| SKYLT.                         | 34.6 | 101.5 | 0    | 0    | 0    | 0    | 0    | 0   | 0    | 0    | 0    | 0    | 0    | 0   | 0    | 0    | 0 | 0    | 0    | 0  | 0    | 0    | 0   |
| DOORS                          | 23.5 | 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               | 4.1  | 0.8   | 360  | 1451 | 263  | 314  | 1302 | 236 | 355  | 1472 | 267  | 219  | 908  | 165 | 0    | 0    | 0 | 53   | 220  | 40 | 151  | 626  | 113 |
| NET EXPOSED BSMT WALL ABOVE GR | 3.3  | 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                    | 1.2  | 0.6   | 0    | 0    | 0    | 0    | 0    | 0   | 0    | 0    | 0    | 0    | 0    | 0   | 0    | 0    | 0 | 0    | 0    | 0  | 0    | 0    | 0   |
| NO ATTIC EXPOSED CLG           | 2.6  | 1.3   | 10   | 26   | 13   | 0    | 0    | 0   | 0    | 0    | 0    | 0    | 0    | 0   | 0    | 0    | 0 | 0    | 0    | 0  | 0    | 0    | 0   |
| EXPOSED FLOOR                  | 2.4  | 0.4   | 0    | 0    | 0    | 0    | 0    | 0   | 0    | 0    | 0    | 0    | 0    | 0   | 0    | 0    | 0 | 0    | 0    | 0  | 0    | 0    | 0   |
| BASEMENT/CRAWL HEAT LOSS       |      |       | 0    |      |      | 0    |      |     | 0    |      |      | 0    |      |     | 0    |      |   | 0    |      |    | 0    |      |     |
| SLAB ON GRADE HEAT LOSS        |      |       | 0    |      |      | 0    |      |     | 0    |      |      | 0    |      |     | 0    |      |   | 0    |      |    | 0    |      |     |
| SUBTOTAL HT LOSS               |      |       | 2267 |      |      | 2013 |      |     | 2757 |      |      | 2015 |      |     | 124  |      |   | 358  |      |    | 214  |      |     |
| SUB TOTAL HT GAIN              |      |       |      |      |      | 1938 |      |     | 2968 |      |      | 2492 |      |     | 61   |      |   | 214  |      |    | 415  |      |     |
| LEVEL FACTOR / MULTIPLIER      | 0.30 | 0.54  |      |      |      | 0.30 | 0.54 |     | 0.30 | 0.54 |      | 0.20 | 0.31 |     | 0.30 | 0.54 |   | 0.30 | 0.54 |    | 0.30 | 0.54 |     |
| AIR CHANGE HEAT LOSS           |      |       | 1215 |      |      | 1079 |      |     | 1477 |      |      | 1080 |      |     | 38   |      |   | 192  |      |    | 14   |      |     |
| AIR CHANGE HEAT GAIN           |      |       | 131  |      |      | 76   |      |     | 200  |      |      | 168  |      |     | 4    |      |   | 14   |      |    | 28   |      |     |
| DUCT LOSS                      |      |       | 0    |      |      | 0    |      |     | 0    |      |      | 0    |      |     | 0    |      |   | 0    |      |    | 0    |      |     |
| DUCT GAIN                      |      |       | 0    |      |      | 0    |      |     | 0    |      |      | 0    |      |     | 0    |      |   | 0    |      |    | 0    |      |     |
| HEAT GAIN PEOPLE               | 240  | 0     | 0    | 0    | 0    | 0    | 0    | 0   | 0    | 1    | 240  | 0    | 0    | 0   | 0    | 0    | 0 | 0    | 0    | 0  | 0    | 0    | 0   |
| HEAT GAIN APPLIANCES/LIGHTS    |      |       | 566  |      |      | 566  |      |     | 566  |      |      | 566  |      |     | 566  |      |   | 566  |      |    | 566  |      |     |
| TOTAL HT LOSS BTU/H            |      |       | 3482 |      |      | 3092 |      |     | 4234 |      |      | 3095 |      |     | 162  |      |   | 560  |      |    | 2587 |      |     |
| TOTAL HT GAIN x 1.3 BTU/H      |      |       | 3425 |      |      | 2306 |      |     | 4855 |      |      | 4506 |      |     | 821  |      |   | 297  |      |    | 1792 |      |     |

TOTAL HEAT GAIN BTU/H: 47705

TONS: 3.98

LOSS DUE TO VENTILATION LOAD BTU/H: 1455

STRUCTURAL HEAT LOSS: 50517

TOTAL COMBINED HEAT LOSS BTU/H: 61971

SITE NAME: RUSSEL GARDENS PH 4  
 BUILDING: GREENPARK HOMES

 WOB  
 TYPE: SPRINGFIELD 3

DATE: Jul-21

GFA: 3744 LO# 91951

 HEATING CFM 1504 COOLING CFM 1504  
 TOTAL HEAT LOSS 60,517 TOTAL HEAT GAIN 47,441  
 AIR FLOW RATE CFM 24.85 AIR FLOW RATE CFM 31.7

 furnace pressure 0.6  
 furnace filter 0.05  
 a/c coil pressure 0.2  
 available pressure for s/a & r/a 0.35

 #GOODMAN  
 GMEC960804CNA 80

 AFUE = 96 %  
 INPUT (BTU/H) = 80,000  
 OUTPUT (BTU/H) = 76,800

| RUN COUNT | 4th | 3rd | 2nd | 1st | Bas |
|-----------|-----|-----|-----|-----|-----|
| S/A       | 0   | 0   | 14  | 10  | 5   |
| R/A       | 0   | 0   | 6   | 3   | 1   |

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

All S/A runs 5'Ø unless noted otherwise on layout.

 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

 FAN SPEED  
 LOW 868  
 MEDLOW 978  
 MEDIUM 1112  
 MEDIUM HIGH 1504  
 HIGH 1615

 DESIGN CFM = 1504  
 CFM @ 5" E.S.P.

TEMPERATURE RISE 47 °F

| RUN #                     | 1    | 2    | 3    | 4     | 5     | 6     | 7     | 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 | ENS-3 | FLEX | MBR  | ENS-4 | FAM  | LV/DN | KT/BF | KT/BF | L/H/G | LND  | G-E/PD | FOY  | MUD  | BAS  | BAS  | BAS  | BAS  |
| RM LOSS MBH               | 1.66 | 1.22 | 1.22 | 2.33  | 1.87  | 2.00  | 0.22  | 2.78 | 1.66 | 0.62  | 1.74 | 3.09  | 2.12  | 2.12  | 1.55  | 0.16 | 0.55   | 2.59 | 2.68 | 4.12 | 4.12 | 4.12 | 4.12 |
| CFM PER RUN HEAT          | 41   | 30   | 30   | 58    | 46    | 50    | 5     | 69   | 41   | 15    | 43   | 77    | 53    | 53    | 38    | 4    | 14     | 64   | 67   | 102  | 102  | 102  | 102  |
| RM GAIN MBH               | 1.95 | 1.11 | 1.11 | 2.77  | 2.77  | 2.09  | 0.07  | 2.10 | 1.95 | 0.39  | 1.71 | 2.31  | 2.43  | 2.43  | 2.25  | 0.82 | 0.30   | 1.79 | 0.58 | 1.39 | 1.39 | 1.39 | 1.39 |
| CFM PER RUN COOLING       | 62   | 35   | 35   | 88    | 88    | 66    | 2     | 66   | 62   | 12    | 54   | 73    | 77    | 77    | 71    | 26   | 9      | 57   | 18   | 44   | 44   | 44   | 44   |
| ADJUSTED PRESSURE         | 0.17 | 0.17 | 0.17 | 0.16  | 0.16  | 0.17  | 0.17  | 0.17 | 0.17 | 0.17  | 0.17 | 0.17  | 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           | 64   | 29   | 32   | 63    | 49    | 26    | 38    | 52   | 48   | 31    | 40   | 11    | 35    | 28    | 36    | 11   | 26     | 43   | 42   | 60   | 28   | 37   | 16   |
| EQUIVALENT LENGTH         | 150  | 140  | 170  | 170   | 150   | 150   | 170   | 190  | 160  | 140   | 160  | 90    | 100   | 120   | 130   | 150  | 100    | 140  | 130  | 150  | 110  | 140  | 100  |
| TOTAL EFFECTIVE LENGTH    | 214  | 169  | 202  | 233   | 199   | 176   | 208   | 242  | 208  | 171   | 200  | 101   | 135   | 148   | 166   | 161  | 126    | 183  | 172  | 210  | 138  | 177  | 116  |
| ADJUSTED PRESSURE         | 0.08 | 0.1  | 0.09 | 0.07  | 0.08  | 0.1   | 0.08  | 0.07 | 0.08 | 0.1   | 0.09 | 0.17  | 0.13  | 0.12  | 0.1   | 0.11 | 0.14   | 0.09 | 0.1  | 0.08 | 0.12 | 0.09 | 0.14 |
| ROUND DUCT SIZE           | 6    | 4    | 4    | 6     | 6     | 6     | 4     | 6    | 6    | 4     | 5    | 6     | 6     | 6     | 5     | 4    | 4      | 5    | 5    | 6    | 6    | 6    | 6    |
| HEATING VELOCITY (ft/min) | 209  | 344  | 344  | 296   | 235   | 255   | 57    | 352  | 209  | 172   | 316  | 393   | 270   | 270   | 279   | 46   | 161    | 470  | 492  | 520  | 520  | 520  | 520  |
| COOLING VELOCITY (ft/min) | 316  | 402  | 402  | 449   | 449   | 337   | 23    | 337  | 316  | 138   | 396  | 372   | 393   | 393   | 521   | 298  | 103    | 419  | 132  | 224  | 224  | 224  | 224  |
| OUTLET GRILL SIZE         | 4X10 | 3X10 | 3X10 | 4X10  | 4X10  | 4X10  | 3X10  | 4X10 | 4X10 | 3X10  | 3X10 | 4X10  | 4X10  | 4X10  | 3X10  | 3X10 | 3X10   | 3X10 | 3X10 | 4X10 | 4X10 | 4X10 | 4X10 |
| TRUNK                     | A    | B    | E    | D     | C     | E     | D     | D    | A    | D     | A    | E     | B     | B     | C     | B    | D      | C    | A    | A    | B    | B    | E    |

| RUN #                     | 25   | 26    | 27    | 28   | 29    | 30    |
|---------------------------|------|-------|-------|------|-------|-------|
| ROOM NAME                 | BAS  | BED-2 | BED-3 | FAM  | L/H/G | ENS-3 |
| RM LOSS MBH               | 4.12 | 2.33  | 1.87  | 1.74 | 1.55  | 0.22  |
| CFM PER RUN HEAT          | 102  | 58    | 46    | 43   | 38    | 5     |
| RM GAIN MBH               | 1.39 | 2.77  | 2.77  | 1.71 | 2.25  | 0.07  |
| CFM PER RUN COOLING       | 44   | 88    | 88    | 54   | 71    | 2     |
| ADJUSTED PRESSURE         | 0.16 | 0.16  | 0.16  | 0.17 | 0.17  | 0.17  |
| ACTUAL DUCT LGH           | 34   | 61    | 53    | 47   | 37    | 41    |
| EQUIVALENT LENGTH         | 150  | 150   | 180   | 140  | 120   | 130   |
| TOTAL EFFECTIVE LENGTH    | 184  | 211   | 233   | 187  | 157   | 171   |
| ADJUSTED PRESSURE         | 0.09 | 0.08  | 0.07  | 0.09 | 0.11  | 0.1   |
| ROUND DUCT SIZE           | 6    | 6     | 6     | 5    | 5     | 4     |
| HEATING VELOCITY (ft/min) | 520  | 296   | 235   | 316  | 279   | 57    |
| COOLING VELOCITY (ft/min) | 224  | 449   | 449   | 396  | 521   | 23    |
| OUTLET GRILL SIZE         | 4X10 | 4X10  | 4X10  | 3X10 | 3X10  | 3X10  |
| TRUNK                     | C    | D     | C     | A    | C     | D     |

| SUPPLY AIR TRUNK SIZE |     |               |            |           |                   |     | RETURN 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               | 337 | 0.08          | 9.3        | 10        | 8                 | 607 | TRUNK G               | 0   | 0.00          | 0          | 0         | 8                 | 0 |
| TRUNK B               | 681 | 0.08          | 12.1       | 18        | 8                 | 681 | TRUNK H               | 0   | 0.00          | 0          | 0         | 8                 | 0 |
| TRUNK C               | 334 | 0.07          | 9.6        | 14        | 8                 | 429 | TRUNK I               | 0   | 0.00          | 0          | 0         | 8                 | 0 |
| TRUNK D               | 558 | 0.07          | 11.7       | 18        | 8                 | 558 | TRUNK J               | 0   | 0.00          | 0          | 0         | 8                 | 0 |
| TRUNK E               | 817 | 0.07          | 13.4       | 22        | 8                 | 668 | TRUNK K               | 0   | 0.00          | 0          | 0         | 8                 | 0 |
| TRUNK F               | 0   | 0.00          | 0          | 0         | 8                 | 0   | TRUNK L               | 0   | 0.00          | 0          | 0         | 8                 | 0 |

| RETURN AIR #       | 1    | 2    | 3    | 4    | 5    | 6    | 7    | 8    | 9    | BR    |
|--------------------|------|------|------|------|------|------|------|------|------|-------|
| AIR VOLUME         | 115  | 95   | 85   | 116  | 130  | 115  | 115  | 355  | 130  | 0     |
| PLENUM PRESSURE    | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15  |
| ACTUAL DUCT LGH    | 57   | 56   | 54   | 51   | 62   | 55   | 46   | 26   | 44   | 1     |
| EQUIVALENT LENGTH  | 245  | 155  | 195  | 235  | 195  | 245  | 245  | 240  | 220  | 0     |
| TOTAL EFFECTIVE LH | 302  | 211  | 249  | 286  | 257  | 300  | 291  | 266  | 264  | 1     |
| ADJUSTED PRESSURE  | 0.05 | 0.07 | 0.06 | 0.05 | 0.06 | 0.05 | 0.05 | 0.06 | 0.06 | 14.80 |
| ROUND DUCT SIZE    | 7    | 6    | 6    | 7    | 7    | 7    | 7    | 10.2 | 7    | 0     |
| INLET GRILL SIZE   | 8    | 8    | 8    | 8    | 8    | 8    | 8    | 8    | 8    | 0     |
|                    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X     |
| INLET GRILL SIZE   | 14   | 14   | 14   | 14   | 14   | 14   | 14   | 30   | 14   | 0     |

TYPE: SPRINGFIELD 3  
 SITE NAME: RUSSEL GARDENS PH 4

 LO # 91951  
 WOB

**RESIDENTIAL MECHANICAL VENTILATION DESIGN SUMMARY**

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

| HEATING SYSTEM                      |                     |
|-------------------------------------|---------------------|
| <input checked="" type="checkbox"/> | Forced Air          |
| <input type="checkbox"/>            | Non Forced Air      |
| <input type="checkbox"/>            | Electric Space Heat |

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

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

| TOTAL VENTILATION CAPACITY 9.32.3.3(1) |                       |
|----------------------------------------|-----------------------|
| Basement + Master Bedroom              | 2 @ 21.2 cfm 42.4 cfm |
| Other Bedrooms                         | 4 @ 10.6 cfm 42.4 cfm |
| Kitchen & Bathrooms                    | 5 @ 10.6 cfm 53 cfm   |
| Other Rooms                            | 8 @ 10.6 cfm 84.8 cfm |
| Table 9.32.3.A.                        | TOTAL 222.6 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                                                | 95.4 cfm |

| SUPPLEMENTAL VENTILATION CAPACITY 9.32.3.6. |           |
|---------------------------------------------|-----------|
| Total Ventilation Capacity                  | 222.6 cfm |
| Less Principal Ventil. Capacity             | 95.4 cfm  |
| Required Supplemental Capacity              | 127.2 cfm |

| PRINCIPAL EXHAUST FAN CAPACITY |                                                  |
|--------------------------------|--------------------------------------------------|
| Model:                         | VANEE G2400H ECM                                 |
| Location:                      | BSMT                                             |
| 95.4 cfm                       | <input checked="" type="checkbox"/> HVI Approved |

| PRINCIPAL EXHAUST HEAT LOSS CALCULATION |        |
|-----------------------------------------|--------|
| CFM                                     | ΔT °F  |
| 95.4 CFM                                | 71 F   |
| X                                       | X      |
| FACTOR                                  | % LOSS |
| 1.08                                    | 0.20   |
| X                                       | X      |

| SUPPLEMENTAL FANS BY INSTALLING CONTRACTOR |                          |     |                                     |       |
|--------------------------------------------|--------------------------|-----|-------------------------------------|-------|
| Location                                   | Model                    | cfm | HVI                                 | Sones |
| ENS                                        | BY INSTALLING CONTRACTOR | 50  | <input checked="" type="checkbox"/> | 3.5   |
| ENS-3                                      | BY INSTALLING CONTRACTOR | 50  | <input checked="" type="checkbox"/> | 3.5   |
| ENS-4                                      | BY INSTALLING CONTRACTOR | 50  | <input checked="" type="checkbox"/> | 3.5   |
| G-E/PD                                     | BY INSTALLING CONTRACTOR | 50  | <input checked="" type="checkbox"/> | 3.5   |

| HEAT RECOVERY VENTILATOR 9.32.3.11. |                                                  |
|-------------------------------------|--------------------------------------------------|
| Model:                              | VANEE G2400H ECM                                 |
| 210 cfm high                        | 80 cfm low                                       |
| 80 % Sensible Efficiency            | <input checked="" type="checkbox"/> HVI Approved |
| @ 32 deg F (0 deg C)                |                                                  |

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

| BUILDER: GREENPARK 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:                                                                                                    | <i>Michael O'Rourke</i> |
| HRAI #                                                                                                        | 001820                  |
| Date:                                                                                                         | July-21                 |

| CSA F280-12 Residential Heat Loss and Heat Gain Calculations                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                      |                                                     |                                                                                                                                                                                        |                                                           |                   |                   |                                                     |                                                    |                                                           |       |       |        |       |       |        |      |        |       |       |     |        |       |        |   |   |       |        |   |   |              |        |  |  |           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |  |                                |  |       |                                |  |       |                               |  |  |  |  |  |        |         |       |       |             |    |     |    |    |             |    |    |   |    |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|-----------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------|-------------------|-------------------|-----------------------------------------------------|----------------------------------------------------|-----------------------------------------------------------|-------|-------|--------|-------|-------|--------|------|--------|-------|-------|-----|--------|-------|--------|---|---|-------|--------|---|---|--------------|--------|--|--|-----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--------------------------------|--|-------|--------------------------------|--|-------|-------------------------------|--|--|--|--|--|--------|---------|-------|-------|-------------|----|-----|----|----|-------------|----|----|---|----|
| Formula Sheet (For Air Leakage / Ventilation Calculation)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                      |                                                     |                                                                                                                                                                                        |                                                           |                   |                   |                                                     |                                                    |                                                           |       |       |        |       |       |        |      |        |       |       |     |        |       |        |   |   |       |        |   |   |              |        |  |  |           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |  |                                |  |       |                                |  |       |                               |  |  |  |  |  |        |         |       |       |             |    |     |    |    |             |    |    |   |    |
| LO#: 91951                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Model: SPRINGFIELD 3 | Builder: GREENPARK HOMES                            | Date: 2021-07-28                                                                                                                                                                       |                                                           |                   |                   |                                                     |                                                    |                                                           |       |       |        |       |       |        |      |        |       |       |     |        |       |        |   |   |       |        |   |   |              |        |  |  |           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |  |                                |  |       |                                |  |       |                               |  |  |  |  |  |        |         |       |       |             |    |     |    |    |             |    |    |   |    |
| Volume Calculation                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                      |                                                     | Air Change & Delta T Data                                                                                                                                                              |                                                           |                   |                   |                                                     |                                                    |                                                           |       |       |        |       |       |        |      |        |       |       |     |        |       |        |   |   |       |        |   |   |              |        |  |  |           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |  |                                |  |       |                                |  |       |                               |  |  |  |  |  |        |         |       |       |             |    |     |    |    |             |    |    |   |    |
| <b>House Volume</b><br><table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Level</th> <th>Floor Area (ft²)</th> <th>Floor Height (ft)</th> <th>Volume (ft³)</th> </tr> </thead> <tbody> <tr> <td>Bsmt</td> <td>1608</td> <td>9</td> <td>14472</td> </tr> <tr> <td>First</td> <td>1608</td> <td>10</td> <td>16080</td> </tr> <tr> <td>Second</td> <td>2136</td> <td>9</td> <td>19224</td> </tr> <tr> <td>Third</td> <td>0</td> <td>9</td> <td>0</td> </tr> <tr> <td>Fourth</td> <td>0</td> <td>9</td> <td>0</td> </tr> <tr> <td colspan="3" style="text-align: right;">Total:</td> <td>49,776.0 ft³</td> </tr> <tr> <td colspan="3" style="text-align: right;">Total:</td> <td>1409.5 m³</td> </tr> </tbody> </table>                                                                                                                                                                                                                                 |                      |                                                     | Level                                                                                                                                                                                  | Floor Area (ft²)                                          | Floor Height (ft) | Volume (ft³)      | Bsmt                                                | 1608                                               | 9                                                         | 14472 | First | 1608   | 10    | 16080 | Second | 2136 | 9      | 19224 | Third | 0   | 9      | 0     | Fourth | 0 | 9 | 0     | Total: |   |   | 49,776.0 ft³ | Total: |  |  | 1409.5 m³ | <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2">WINTER NATURAL AIR CHANGE RATE</th> <th>0.365</th> </tr> <tr> <th colspan="2">SUMMER NATURAL AIR CHANGE RATE</th> <th>0.130</th> </tr> </thead> </table><br><table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="5">Design Temperature Difference</th> </tr> <tr> <th></th> <th>Tin °C</th> <th>Tout °C</th> <th>ΔT °C</th> <th>ΔT °F</th> </tr> </thead> <tbody> <tr> <td>Winter DTDh</td> <td>22</td> <td>-17</td> <td>39</td> <td>71</td> </tr> <tr> <td>Summer DTDc</td> <td>24</td> <td>31</td> <td>7</td> <td>13</td> </tr> </tbody> </table> |  | WINTER NATURAL AIR CHANGE RATE |  | 0.365 | SUMMER NATURAL AIR CHANGE RATE |  | 0.130 | Design Temperature Difference |  |  |  |  |  | Tin °C | Tout °C | ΔT °C | ΔT °F | Winter DTDh | 22 | -17 | 39 | 71 | Summer DTDc | 24 | 31 | 7 | 13 |
| Level                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Floor Area (ft²)     | Floor Height (ft)                                   | Volume (ft³)                                                                                                                                                                           |                                                           |                   |                   |                                                     |                                                    |                                                           |       |       |        |       |       |        |      |        |       |       |     |        |       |        |   |   |       |        |   |   |              |        |  |  |           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |  |                                |  |       |                                |  |       |                               |  |  |  |  |  |        |         |       |       |             |    |     |    |    |             |    |    |   |    |
| Bsmt                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 1608                 | 9                                                   | 14472                                                                                                                                                                                  |                                                           |                   |                   |                                                     |                                                    |                                                           |       |       |        |       |       |        |      |        |       |       |     |        |       |        |   |   |       |        |   |   |              |        |  |  |           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |  |                                |  |       |                                |  |       |                               |  |  |  |  |  |        |         |       |       |             |    |     |    |    |             |    |    |   |    |
| First                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 1608                 | 10                                                  | 16080                                                                                                                                                                                  |                                                           |                   |                   |                                                     |                                                    |                                                           |       |       |        |       |       |        |      |        |       |       |     |        |       |        |   |   |       |        |   |   |              |        |  |  |           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |  |                                |  |       |                                |  |       |                               |  |  |  |  |  |        |         |       |       |             |    |     |    |    |             |    |    |   |    |
| Second                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 2136                 | 9                                                   | 19224                                                                                                                                                                                  |                                                           |                   |                   |                                                     |                                                    |                                                           |       |       |        |       |       |        |      |        |       |       |     |        |       |        |   |   |       |        |   |   |              |        |  |  |           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |  |                                |  |       |                                |  |       |                               |  |  |  |  |  |        |         |       |       |             |    |     |    |    |             |    |    |   |    |
| Third                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 0                    | 9                                                   | 0                                                                                                                                                                                      |                                                           |                   |                   |                                                     |                                                    |                                                           |       |       |        |       |       |        |      |        |       |       |     |        |       |        |   |   |       |        |   |   |              |        |  |  |           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |  |                                |  |       |                                |  |       |                               |  |  |  |  |  |        |         |       |       |             |    |     |    |    |             |    |    |   |    |
| Fourth                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 0                    | 9                                                   | 0                                                                                                                                                                                      |                                                           |                   |                   |                                                     |                                                    |                                                           |       |       |        |       |       |        |      |        |       |       |     |        |       |        |   |   |       |        |   |   |              |        |  |  |           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |  |                                |  |       |                                |  |       |                               |  |  |  |  |  |        |         |       |       |             |    |     |    |    |             |    |    |   |    |
| Total:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                      |                                                     | 49,776.0 ft³                                                                                                                                                                           |                                                           |                   |                   |                                                     |                                                    |                                                           |       |       |        |       |       |        |      |        |       |       |     |        |       |        |   |   |       |        |   |   |              |        |  |  |           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |  |                                |  |       |                                |  |       |                               |  |  |  |  |  |        |         |       |       |             |    |     |    |    |             |    |    |   |    |
| Total:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                      |                                                     | 1409.5 m³                                                                                                                                                                              |                                                           |                   |                   |                                                     |                                                    |                                                           |       |       |        |       |       |        |      |        |       |       |     |        |       |        |   |   |       |        |   |   |              |        |  |  |           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |  |                                |  |       |                                |  |       |                               |  |  |  |  |  |        |         |       |       |             |    |     |    |    |             |    |    |   |    |
| WINTER NATURAL AIR CHANGE RATE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                      | 0.365                                               |                                                                                                                                                                                        |                                                           |                   |                   |                                                     |                                                    |                                                           |       |       |        |       |       |        |      |        |       |       |     |        |       |        |   |   |       |        |   |   |              |        |  |  |           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |  |                                |  |       |                                |  |       |                               |  |  |  |  |  |        |         |       |       |             |    |     |    |    |             |    |    |   |    |
| SUMMER NATURAL AIR CHANGE RATE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                      | 0.130                                               |                                                                                                                                                                                        |                                                           |                   |                   |                                                     |                                                    |                                                           |       |       |        |       |       |        |      |        |       |       |     |        |       |        |   |   |       |        |   |   |              |        |  |  |           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |  |                                |  |       |                                |  |       |                               |  |  |  |  |  |        |         |       |       |             |    |     |    |    |             |    |    |   |    |
| Design Temperature Difference                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                      |                                                     |                                                                                                                                                                                        |                                                           |                   |                   |                                                     |                                                    |                                                           |       |       |        |       |       |        |      |        |       |       |     |        |       |        |   |   |       |        |   |   |              |        |  |  |           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |  |                                |  |       |                                |  |       |                               |  |  |  |  |  |        |         |       |       |             |    |     |    |    |             |    |    |   |    |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Tin °C               | Tout °C                                             | ΔT °C                                                                                                                                                                                  | ΔT °F                                                     |                   |                   |                                                     |                                                    |                                                           |       |       |        |       |       |        |      |        |       |       |     |        |       |        |   |   |       |        |   |   |              |        |  |  |           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |  |                                |  |       |                                |  |       |                               |  |  |  |  |  |        |         |       |       |             |    |     |    |    |             |    |    |   |    |
| Winter DTDh                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 22                   | -17                                                 | 39                                                                                                                                                                                     | 71                                                        |                   |                   |                                                     |                                                    |                                                           |       |       |        |       |       |        |      |        |       |       |     |        |       |        |   |   |       |        |   |   |              |        |  |  |           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |  |                                |  |       |                                |  |       |                               |  |  |  |  |  |        |         |       |       |             |    |     |    |    |             |    |    |   |    |
| Summer DTDc                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 24                   | 31                                                  | 7                                                                                                                                                                                      | 13                                                        |                   |                   |                                                     |                                                    |                                                           |       |       |        |       |       |        |      |        |       |       |     |        |       |        |   |   |       |        |   |   |              |        |  |  |           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |  |                                |  |       |                                |  |       |                               |  |  |  |  |  |        |         |       |       |             |    |     |    |    |             |    |    |   |    |
| <b>5.2.3.1 Heat Loss due to Air Leakage</b><br>$HL_{airb} = LR_{airh} \times \frac{V_b}{3.6} \times DTD_h \times 1.2$ <p>0.365 x 391.53 x 39 °C x 1.2 = 6721 W</p> <p>= 22931 Btu/h</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                      |                                                     | <b>6.2.6 Sensible Gain due to Air Leakage</b><br>$HG_{salb} = LR_{airc} \times \frac{V_b}{3.6} \times DTD_c \times 1.2$ <p>0.130 x 391.53 x 7 °C x 1.2 = 436 W</p> <p>= 1488 Btu/h</p> |                                                           |                   |                   |                                                     |                                                    |                                                           |       |       |        |       |       |        |      |        |       |       |     |        |       |        |   |   |       |        |   |   |              |        |  |  |           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |  |                                |  |       |                                |  |       |                               |  |  |  |  |  |        |         |       |       |             |    |     |    |    |             |    |    |   |    |
| <b>5.2.3.2 Heat Loss due to Mechanical Ventilation</b><br>$HL_{vaib} = PVC \times DTD_h \times 1.08 \times (1 - E)$ <p>95 CFM x 71 °F x 1.08 x 0.20 = 1455 Btu/h</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                      |                                                     | <b>6.2.7 Sensible heat Gain due to Ventilation</b><br>$HL_{vaib} = PVC \times DTD_h \times 1.08 \times (1 - E)$ <p>95 CFM x 13 °F x 1.08 x 0.20 = 264 Btu/h</p>                        |                                                           |                   |                   |                                                     |                                                    |                                                           |       |       |        |       |       |        |      |        |       |       |     |        |       |        |   |   |       |        |   |   |              |        |  |  |           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |  |                                |  |       |                                |  |       |                               |  |  |  |  |  |        |         |       |       |             |    |     |    |    |             |    |    |   |    |
| 5.2.3.3 Calculation of Air Change Heat Loss for Each Room (Floor Multiplier Section)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                      |                                                     |                                                                                                                                                                                        |                                                           |                   |                   |                                                     |                                                    |                                                           |       |       |        |       |       |        |      |        |       |       |     |        |       |        |   |   |       |        |   |   |              |        |  |  |           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |  |                                |  |       |                                |  |       |                               |  |  |  |  |  |        |         |       |       |             |    |     |    |    |             |    |    |   |    |
| $HL_{airr} = \text{Level Factor} \times HL_{airbv} \times \{ (HL_{agcr} + HL_{bgcr}) \div (HL_{agclevel} + HL_{bgclevel}) \}$ <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Level</th> <th>Level Factor (LF)</th> <th>HLairve Air Leakage + Ventilation Heat Loss (Btu/h)</th> <th>Level Conductive Heat Loss: (HL<sub>level</sub>)</th> <th>Air Leakage Heat Loss Multiplier (LF x HLairbv / HLlevel)</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>0.5</td> <td rowspan="5">22,931</td> <td>9,152</td> <td>1.253</td> </tr> <tr> <td>2</td> <td>0.3</td> <td>12,837</td> <td>0.536</td> </tr> <tr> <td>3</td> <td>0.2</td> <td>14,881</td> <td>0.308</td> </tr> <tr> <td>4</td> <td>0</td> <td>0</td> <td>0.000</td> </tr> <tr> <td>5</td> <td>0</td> <td>0</td> <td>0.000</td> </tr> </tbody> </table> <p>*HLairbv = Air leakage heat loss + ventilation heat loss<br/> *For a balanced or supply only ventilation system HLairve = 0</p> |                      |                                                     |                                                                                                                                                                                        |                                                           | Level             | Level Factor (LF) | HLairve Air Leakage + Ventilation Heat Loss (Btu/h) | Level Conductive Heat Loss: (HL <sub>level</sub> ) | Air Leakage Heat Loss Multiplier (LF x HLairbv / HLlevel) | 1     | 0.5   | 22,931 | 9,152 | 1.253 | 2      | 0.3  | 12,837 | 0.536 | 3     | 0.2 | 14,881 | 0.308 | 4      | 0 | 0 | 0.000 | 5      | 0 | 0 | 0.000        |        |  |  |           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |  |                                |  |       |                                |  |       |                               |  |  |  |  |  |        |         |       |       |             |    |     |    |    |             |    |    |   |    |
| Level                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Level Factor (LF)    | HLairve Air Leakage + Ventilation Heat Loss (Btu/h) | Level Conductive Heat Loss: (HL <sub>level</sub> )                                                                                                                                     | Air Leakage Heat Loss Multiplier (LF x HLairbv / HLlevel) |                   |                   |                                                     |                                                    |                                                           |       |       |        |       |       |        |      |        |       |       |     |        |       |        |   |   |       |        |   |   |              |        |  |  |           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |  |                                |  |       |                                |  |       |                               |  |  |  |  |  |        |         |       |       |             |    |     |    |    |             |    |    |   |    |
| 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 0.5                  | 22,931                                              | 9,152                                                                                                                                                                                  | 1.253                                                     |                   |                   |                                                     |                                                    |                                                           |       |       |        |       |       |        |      |        |       |       |     |        |       |        |   |   |       |        |   |   |              |        |  |  |           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |  |                                |  |       |                                |  |       |                               |  |  |  |  |  |        |         |       |       |             |    |     |    |    |             |    |    |   |    |
| 2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 0.3                  |                                                     | 12,837                                                                                                                                                                                 | 0.536                                                     |                   |                   |                                                     |                                                    |                                                           |       |       |        |       |       |        |      |        |       |       |     |        |       |        |   |   |       |        |   |   |              |        |  |  |           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |  |                                |  |       |                                |  |       |                               |  |  |  |  |  |        |         |       |       |             |    |     |    |    |             |    |    |   |    |
| 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 0.2                  |                                                     | 14,881                                                                                                                                                                                 | 0.308                                                     |                   |                   |                                                     |                                                    |                                                           |       |       |        |       |       |        |      |        |       |       |     |        |       |        |   |   |       |        |   |   |              |        |  |  |           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |  |                                |  |       |                                |  |       |                               |  |  |  |  |  |        |         |       |       |             |    |     |    |    |             |    |    |   |    |
| 4                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 0                    |                                                     | 0                                                                                                                                                                                      | 0.000                                                     |                   |                   |                                                     |                                                    |                                                           |       |       |        |       |       |        |      |        |       |       |     |        |       |        |   |   |       |        |   |   |              |        |  |  |           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |  |                                |  |       |                                |  |       |                               |  |  |  |  |  |        |         |       |       |             |    |     |    |    |             |    |    |   |    |
| 5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 0                    |                                                     | 0                                                                                                                                                                                      | 0.000                                                     |                   |                   |                                                     |                                                    |                                                           |       |       |        |       |       |        |      |        |       |       |     |        |       |        |   |   |       |        |   |   |              |        |  |  |           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |  |                                |  |       |                                |  |       |                               |  |  |  |  |  |        |         |       |       |             |    |     |    |    |             |    |    |   |    |



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Web: www.hvacdesigns.ca E-mail: info@hvacdesigns.ca

### HEAT LOSS AND GAIN SUMMARY SHEET

MODEL: SPRINGFIELD 3  
SFQT: 3744

WOB  
LO# 91951

BUILDER: GREENPARK HOMES  
SITE: RUSSEL GARDENS PH 4

#### DESIGN ASSUMPTIONS

|                      |    |                                |    |
|----------------------|----|--------------------------------|----|
| HEATING              | °F | COOLING                        | °F |
| OUTDOOR DESIGN TEMP. | 1  | 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:               | 3.57            | ASSUMED (Y/N):            | Y        |
| AIR TIGHTNESS CATEGORY:             | AVERAGE         | ASSUMED (Y/N):            | Y        |
| WIND EXPOSURE:                      | SHELTERED       | ASSUMED (Y/N):            | Y        |
| HOUSE VOLUME (ft³):                 | 49776.0         | ASSUMED (Y/N):            | Y        |
| INTERNAL SHADING:                   | BLINDS/CURTAINS | ASSUMED OCCUPANTS:        | 6        |
| INTERIOR LIGHTING LOAD (Btu/h/ft²): | 1.27            | DC BRUSHLESS MOTOR (Y/N): | Y        |
| FOUNDATION CONFIGURATION            | BCIN_1          | DEPTH BELOW GRADE:        | 6.0 ft   |
| LENGTH: 55.0 ft                     | WIDTH: 40.0 ft  | EXPOSED PERIMETER:        | 173.0 ft |
| WOB INSULATION CONFIGURATION        | SCB_9           | WOB EXPOSED PERIMETER     | 17.0 ft  |

#### 2012 OBC - COMPLIANCE PACKAGE

##### Component

##### Compliance Package

##### A1

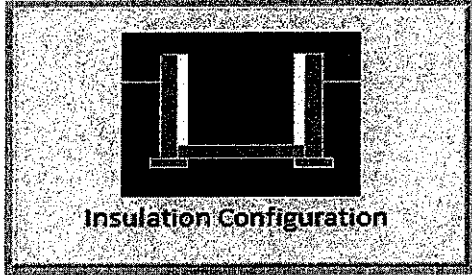
| Nominal | Min. Eff. |
|---------|-----------|
|---------|-----------|

|                                                                            |       |       |
|----------------------------------------------------------------------------|-------|-------|
| 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                                       | 96%   | -     |
| HRV Minimum Efficiency                                                     | 75%   | -     |
| Domestic Hot Water Heater Minimum EF                                       | 0.8   | -     |

INDIVIDUAL BCIN: 19669  
MICHAEL O'ROURKE

## Residential Foundation Thermal Load Calculator

Supplemental tool for CAN/CSA-F280

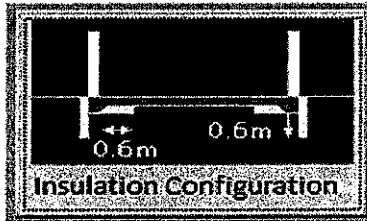
| Weather Station Description    |                                           |                                                                                     |
|--------------------------------|-------------------------------------------|-------------------------------------------------------------------------------------|
| Province:                      | Ontario                                   |                                                                                     |
| Region:                        | Hamilton                                  |                                                                                     |
| Site Description               |                                           |                                                                                     |
| Soil Conductivity:             | Normal conductivity: dry sand, loam, clay |                                                                                     |
| Water Table:                   | Normal (7-10 m, 23-33 ft)                 |                                                                                     |
| Foundation Dimensions          |                                           |                                                                                     |
| Floor Length (m):              | 4.6                                       |  |
| Floor Width (m):               | 12.2                                      |                                                                                     |
| Exposed Perimeter (m):         | 52.7                                      |                                                                                     |
| Wall Height (m):               | 2.7                                       |                                                                                     |
| Depth Below Grade (m):         | 1.57                                      |                                                                                     |
| Window Area (m <sup>2</sup> ): | 1.4                                       |                                                                                     |
| Door Area (m <sup>2</sup> ):   | 1.9                                       |                                                                                     |
| Radiant Slab                   |                                           |                                                                                     |
| Heated Fraction of the Slab:   | 0                                         |                                                                                     |
| Fluid Temperature (°C):        | 33                                        |                                                                                     |
| Design Months                  |                                           |                                                                                     |
| Heating Month                  | 1                                         |                                                                                     |
| Foundation Loads               |                                           |                                                                                     |
| Heating Load (Watts):          | 948                                       |                                                                                     |

TYPE: SPRINGFIELD 3  
LO# 91951

WOB

## Residential Slab on Grade Thermal Load Calculator

Supplemental tool for CAN/CSA-F280

| Weather Station Description  |                                           |                                                                                     |
|------------------------------|-------------------------------------------|-------------------------------------------------------------------------------------|
| Province:                    | Ontario                                   |                                                                                     |
| Region:                      | Hamilton                                  |                                                                                     |
| Site Description             |                                           |                                                                                     |
| Soil Conductivity:           | Normal conductivity: dry sand, loam, clay |                                                                                     |
| Water Table:                 | Normal (7-10 m, 23-33 ft)                 |                                                                                     |
| Foundation Dimensions        |                                           |                                                                                     |
| Length (m):                  | 1.5                                       |  |
| Width (m):                   | 12.2                                      |                                                                                     |
| Exposed Perimeter (m):       | 5.2                                       |                                                                                     |
| Radiant Slab                 |                                           |                                                                                     |
| Heated Fraction of the Slab: | 0                                         |                                                                                     |
| Fluid Temperature (°C):      | 33                                        |                                                                                     |
| Design Months                |                                           |                                                                                     |
| Heating Month                | 1                                         |                                                                                     |
| Results                      |                                           |                                                                                     |
| Heating Load (Watts):        |                                           | 70                                                                                  |

TYPE: SPRINGFIELD 3  
LO# 91951

WOB

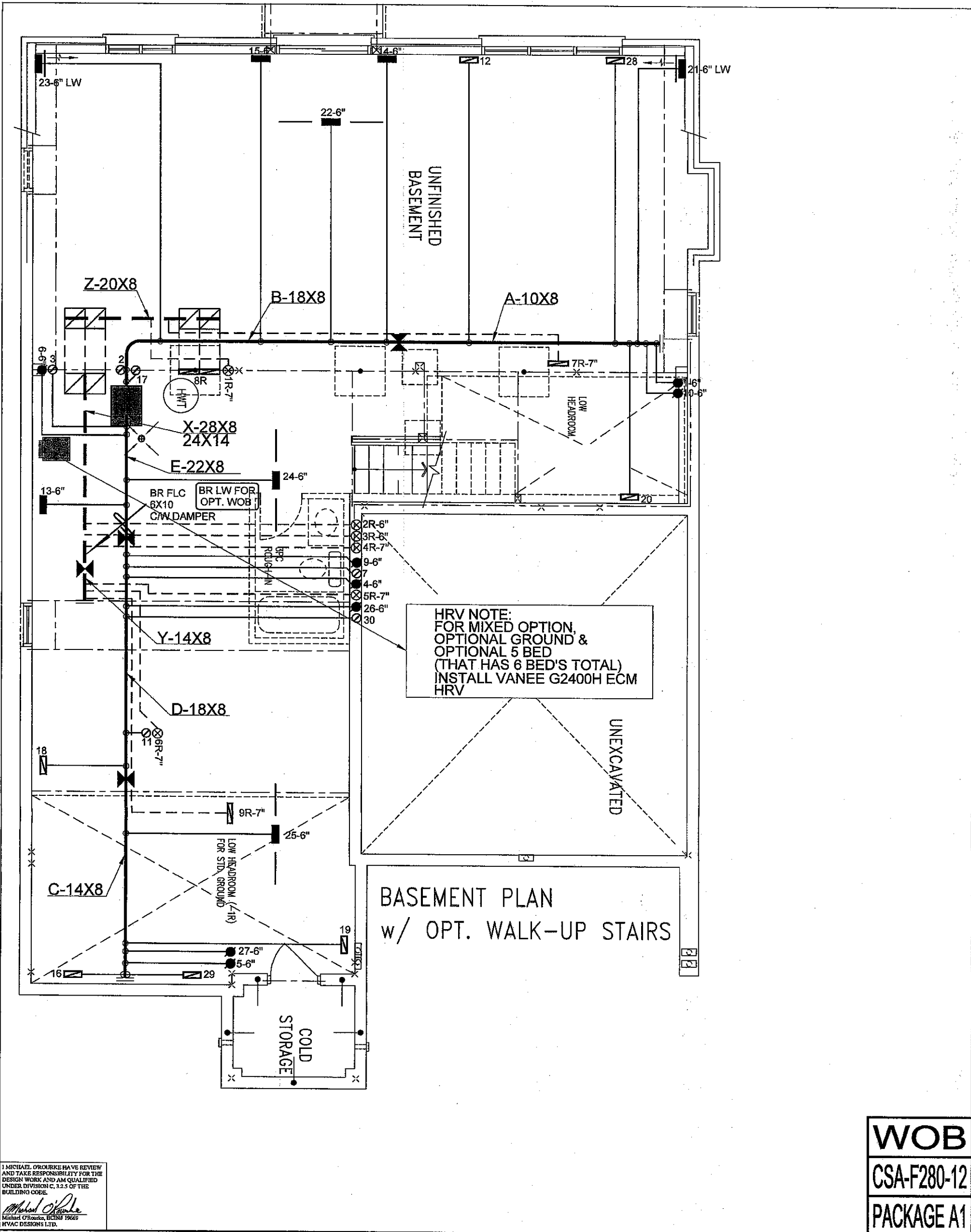
## Air Infiltration Residential Load Calculator

Supplemental tool for CAN/CSA-F280

| Weather Station Description       |                            |                        |       |
|-----------------------------------|----------------------------|------------------------|-------|
| Province:                         | Ontario                    |                        |       |
| Region:                           | Hamilton                   |                        |       |
| 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):       | 8.53                       |                        |       |
| Building Configuration            |                            |                        |       |
| Type:                             | Detached                   |                        |       |
| Number of Stories:                | Two                        |                        |       |
| Foundation:                       | Full                       |                        |       |
| House Volume (m <sup>3</sup> ):   | 1409.5                     |                        |       |
| Air Leakage/Ventilation           |                            |                        |       |
| Air Tightness Type:               | Present (1961-) (3.57 ACH) |                        |       |
| Custom BDT Data:                  | ELA @ 10 Pa.               | 1878.9 cm <sup>2</sup> |       |
|                                   | 3.57                       | ACH @ 50 Pa            |       |
| Mechanical Ventilation (L/s):     | Total Supply               | Total Exhaust          |       |
|                                   | 45.0                       | 45.0                   |       |
| Flue Size                         |                            |                        |       |
| Flue #:                           | #1                         | #2                     | #3 #4 |
| Diameter (mm):                    | 0                          | 0                      | 0 0   |
| Natural Infiltration Rates        |                            |                        |       |
| Heating Air Leakage Rate (ACH/H): | 0.365                      |                        |       |
| Cooling Air Leakage Rate (ACH/H): | 0.130                      |                        |       |

TYPE: SPRINGFIELD 3  
LO# 91951

WOB



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

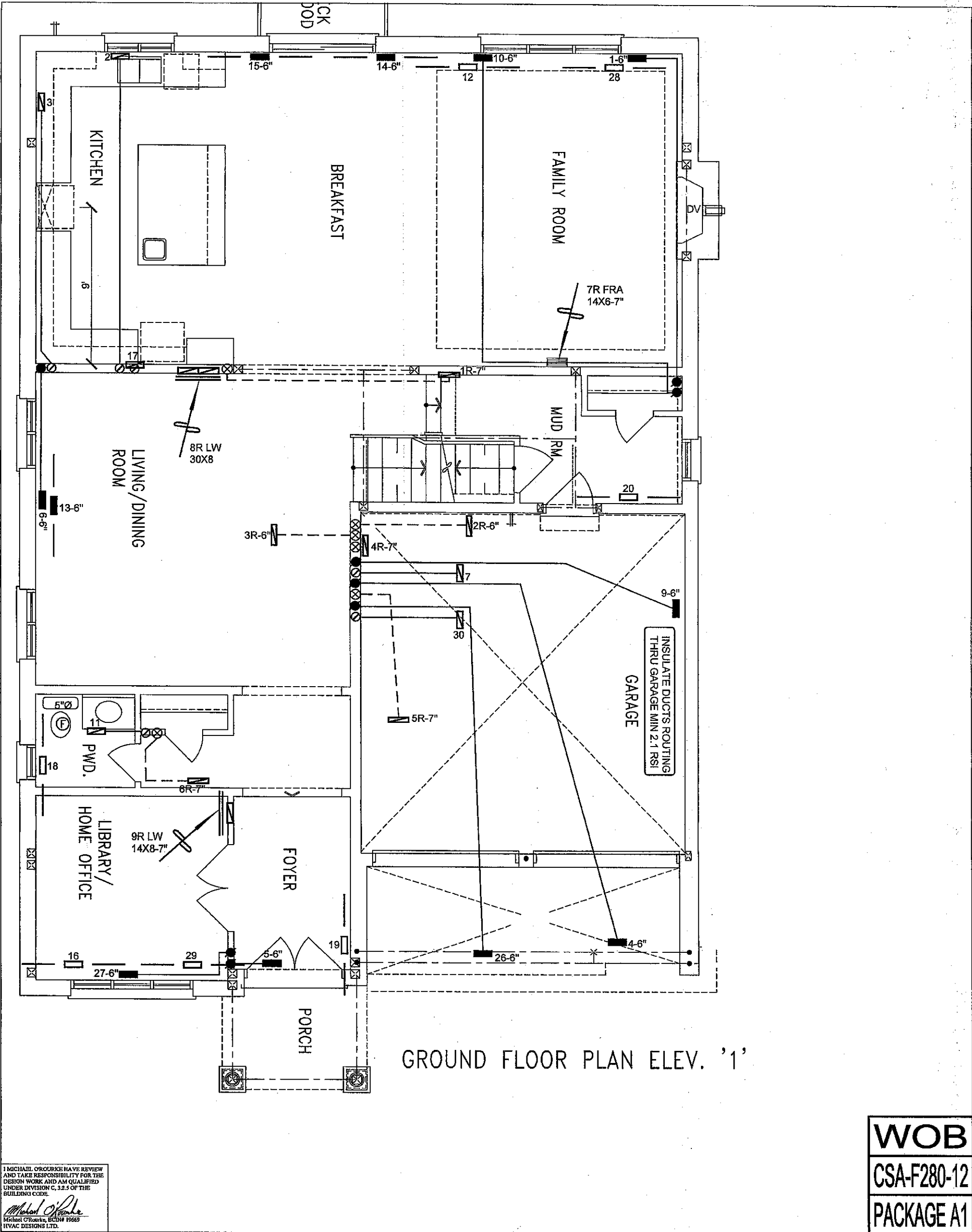
*Michael O'Rourke*  
Michael O'Rourke, BCIN# 19669  
HVAC DESIGNS LTD.

**WOB**  
**CSA-F280-12**  
**PACKAGE A1**

| HVAC LEGEND |                           |        |                                 |        |                              |        |                            | 3.        |             |      |
|-------------|---------------------------|--------|---------------------------------|--------|------------------------------|--------|----------------------------|-----------|-------------|------|
| SYMBOL      | DESCRIPTION               | SYMBOL | DESCRIPTION                     | SYMBOL | DESCRIPTION                  | SYMBOL | DESCRIPTION                | 2.        |             |      |
|             | SUPPLY AIR GRILLE         |        | 6" SUPPLY AIR BOOT ABOVE        |        | 14"x8" RETURN AIR GRILLE     |        | RETURN AIR STACK ABOVE     | 1.        |             |      |
|             | SUPPLY AIR GRILLE 6" BOOT |        | SUPPLY AIR STACK FROM 2nd FLOOR |        | 30"x8" RETURN AIR GRILLE     |        | RETURN AIR STACK 2nd FLOOR | No.       | Description | Date |
|             | SUPPLY AIR BOOT ABOVE     |        | 6" SUPPLY AIR STACK 2nd FLOOR   |        | FRA- FLOOR RETURN AIR GRILLE |        | REDUCER                    | REVISIONS |             |      |

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|                                                                   |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                              |           |                        |    |   |                                        |  |   |
|-------------------------------------------------------------------|--|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|------------------------|----|---|----------------------------------------|--|---|
| Client<br><b>GREENPARK HOMES</b>                                  |  | <div><p>375 Finley Ave. Suite 202 - Ajax, Ontario<br/>L1S 2E2 Tel. 905.619.2300 - 905.420.5300 Fax 905.619.2375<br/>Email: info@hvacdesigns.ca<br/>Web: www.hvacdesigns.ca<br/>Specializing in Residential Mechanical Design Services</p><p>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.</p></div> | HEAT LOSS 61971 BTU/H<br>UNIT DATA                                                                                                                           |           | # OF RUNS S/A R/A FANS |    |   | Sheet Title                            |  |   |
| Project Name<br><b>RUSSELL GARDENS PH 4<br/>HAMILTON, ONTARIO</b> |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | MAKE<br>GOODMAN                                                                                                                                              | 3RD FLOOR |                        |    |   | <b>BASEMENT<br/>HEATING<br/>LAYOUT</b> |  |   |
| <b>WOB<br/>SPRINGFIELD 3    3744 sqft</b>                         |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | MODEL<br>GMEC960804CNA                                                                                                                                       | 2ND FLOOR |                        | 14 | 6 |                                        |  | 5 |
|                                                                   |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | INPUT<br>80 MBTU/H                                                                                                                                           | 1ST FLOOR |                        | 10 | 3 |                                        |  | 2 |
|                                                                   |  | OUTPUT<br>76.8 MBTU/H                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | BASEMENT                                                                                                                                                     |           | 5                      | 1  | 0 | Date<br>JULY/2021                      |  |   |
|                                                                   |  | COOLING<br>4.0 TONS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | ALL S/A DIFFUSERS 4 "x10"<br>UNLESS NOTED OTHERWISE<br>ON LAYOUT. ALL S/A RUNS 5"Ø<br>UNLESS NOTED OTHERWISE<br>ON LAYOUT. UNDERCUT<br>DOORS 1" min. FOR R/A |           |                        |    |   | Scale<br>3/16" = 1'-0"                 |  |   |
|                                                                   |  | FAN SPEED<br>1504 cfm @ 0.8" w.c.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                              |           |                        |    |   | BCIN# 19669                            |  |   |
|                                                                   |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                              |           |                        |    |   | <b>LO#    91951</b>                    |  |   |



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

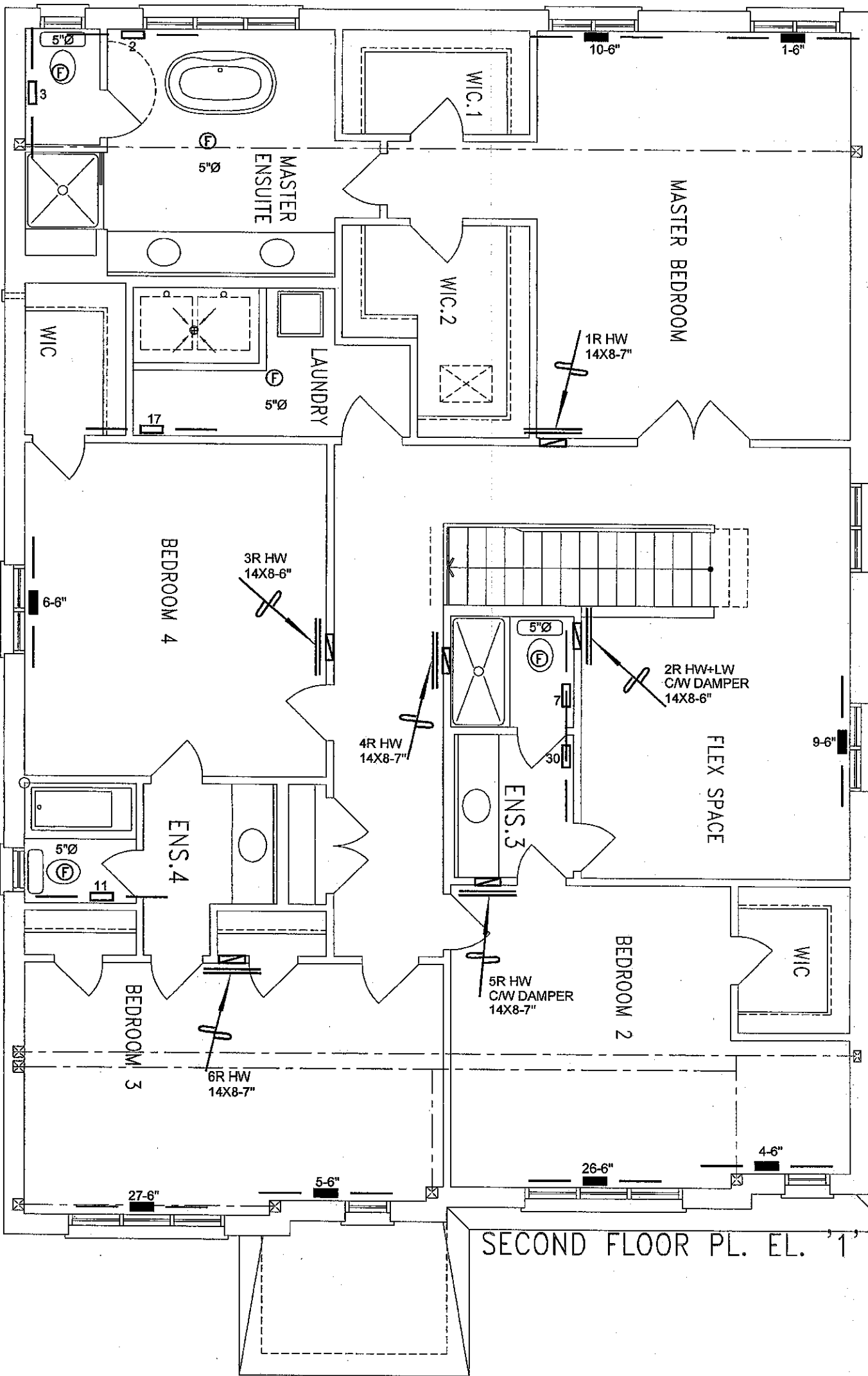
*Michael O'Dourke*  
Michael O'Dourke, BCIN# 19669  
HVAC DESIGNS LTD.

**WOB**  
**CSA-F280-12**  
**PACKAGE A1**

| HVAC LEGEND |                           |        |                                 |        |                              | 3.     |                            |                      |
|-------------|---------------------------|--------|---------------------------------|--------|------------------------------|--------|----------------------------|----------------------|
| 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     | 2.                   |
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|             | SUPPLY AIR BOOT ABOVE     |        | 6" SUPPLY AIR STACK 2nd FLOOR   |        | FRA- FLOOR RETURN AIR GRILLE |        | REDUCER                    | No. Description Date |
| REVISIONS   |                           |        |                                 |        |                              |        |                            |                      |

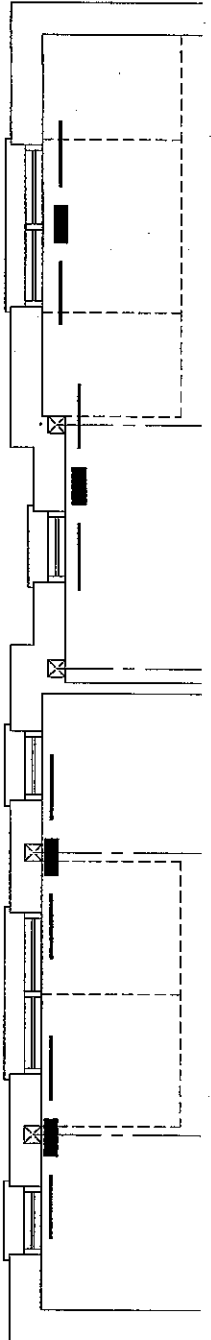
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|                                                                   |  |                                                                                                                                                                                                                                                                                                                   |                                                          |              |
|-------------------------------------------------------------------|--|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------|--------------|
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| Project Name<br><b>RUSSELL GARDENS PH 4<br/>HAMILTON, ONTARIO</b> |  |                                                                                                                                                                                                                                                                                                                   | Date<br><b>JULY/2021</b>                                 |              |
| <b>WOB<br/>SPRINGFIELD 3     3744 sqft</b>                        |  | 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.                                                           | Scale<br><b>3/16" = 1'-0"</b>                            |              |
|                                                                   |  |                                                                                                                                                                                                                                                                                                                   | BCIN# 19669                                              |              |
|                                                                   |  |                                                                                                                                                                                                                                                                                                                   | <b>LO#</b>                                               | <b>91951</b> |



SECOND FLOOR PL. EL. '2'

SECOND FLOOR PL. EL. '2'



SECOND FLOOR PL. EL. '1'

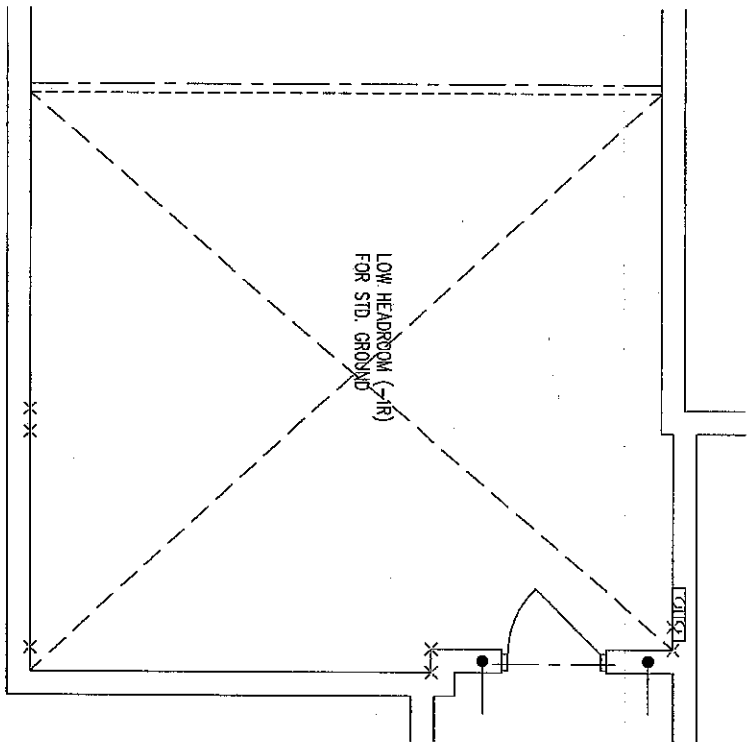
I MICHAEL O'LOURKE HAVE REVIEWED AND TAKE RESPONSIBILITY FOR THE DESIGN WORK AND AM QUALIFIED UNDER DIVISION C, 3.2.5 OF THE BUILDING CODE.  
*Michael O'Lo Burke*  
Michael O'Lo Burke, BCIN# 19669  
HVAC DESIGNS LTD.

**WOB**  
**CSA-F280-12**  
**PACKAGE A1**

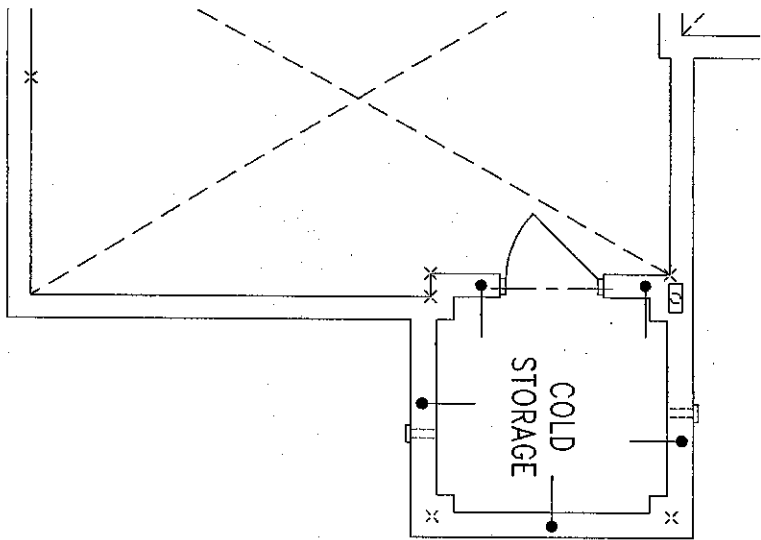
| HVAC LEGEND |                           |        |                                 |        |                              |        |                            | 3.        |             |      |
|-------------|---------------------------|--------|---------------------------------|--------|------------------------------|--------|----------------------------|-----------|-------------|------|
| SYMBOL      | DESCRIPTION               | SYMBOL | DESCRIPTION                     | SYMBOL | DESCRIPTION                  | SYMBOL | DESCRIPTION                | 2.        |             |      |
|             | SUPPLY AIR GRILLE         |        | 6" SUPPLY AIR BOOT ABOVE        |        | 14"x8" RETURN AIR GRILLE     |        | RETURN AIR STACK ABOVE     | 1.        |             |      |
|             | SUPPLY AIR GRILLE 6" BOOT |        | SUPPLY AIR STACK FROM 2nd FLOOR |        | 30"x8" RETURN AIR GRILLE     |        | RETURN AIR STACK 2nd FLOOR | No.       | Description | Date |
|             | SUPPLY AIR BOOT ABOVE     |        | 6" SUPPLY AIR STACK 2nd FLOOR   |        | FRA- FLOOR RETURN AIR GRILLE |        | REDUCER                    | REVISIONS |             |      |

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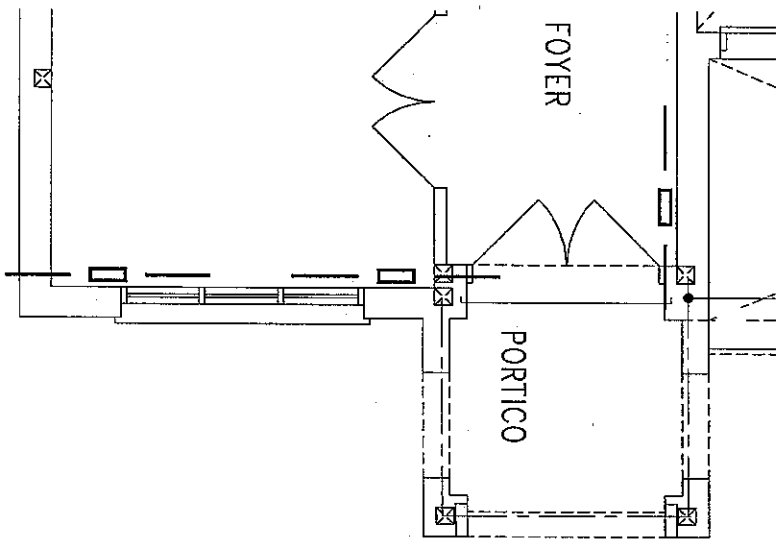
|                                                               |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                   |  |
|---------------------------------------------------------------|--|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------|--|
| Client<br><b>GREENPARK HOMES</b>                              |  | <br>375 Finley Ave. Suite 202 - Ajax, Ontario<br>L1S 2E2 Tel. 905.619.2300 - 905.420.5300 Fax 905.619.2375<br>Email: info@hvacdesigns.ca<br>Web: www.hvacdesigns.ca<br>Specializing in Residential Mechanical Design Services<br>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<br><b>SECOND FLOOR HEATING LAYOUT</b> |  |
| Project Name<br><b>RUSSELL GARDENS PH 4 HAMILTON, ONTARIO</b> |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Date<br><b>JULY/2021</b>                          |  |
| <b>WOB</b><br><b>SPRINGFIELD 3 3744 sqft</b>                  |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Scale<br><b>3/16" = 1'-0"</b>                     |  |
|                                                               |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | BCIN# 19669                                       |  |
|                                                               |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | LO# <b>91951</b>                                  |  |



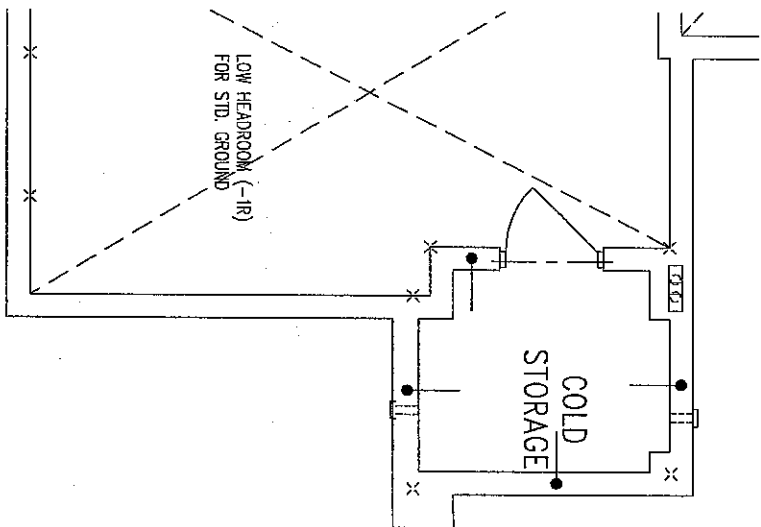
PART. BASEMENT PLAN ELEV. '1'  
FOR OPT. GUEST SUITE COND.



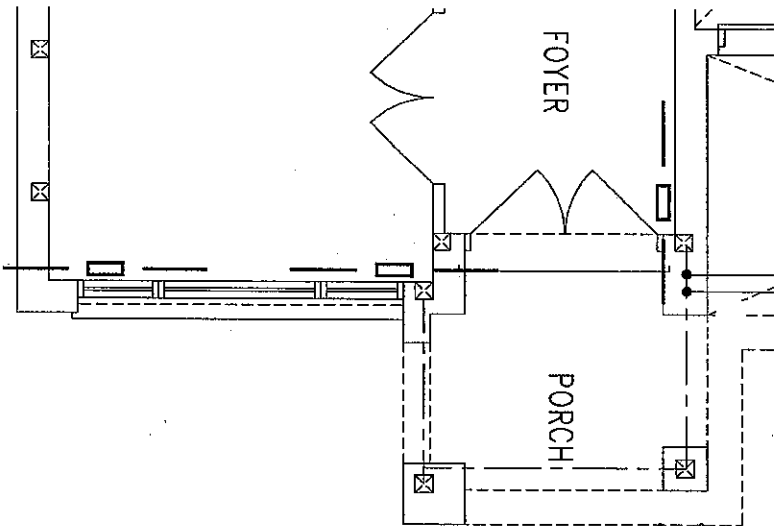
BASEMENT PLAN ELEV. '2'



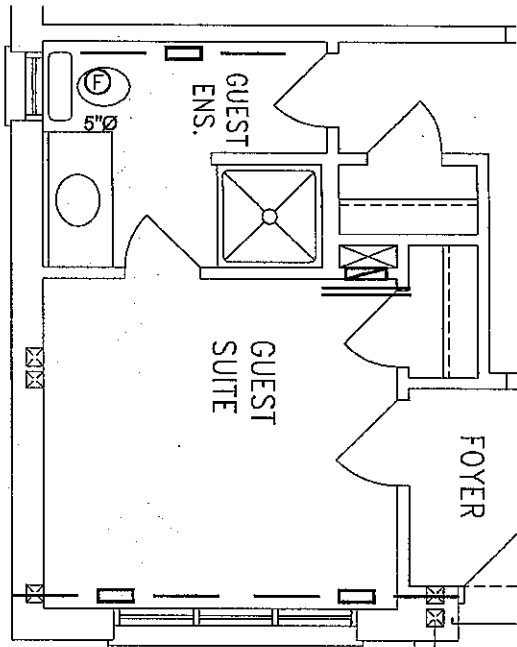
GROUND FLOOR PLAN ELEV. '2'



BASEMENT PLAN ELEV. '3'



GROUND FLOOR PLAN ELEV. '3'



PART. GROUND FLOOR PLAN -  
W/ OPT. GUEST SUITE

**WOB**  
**CSA-F280-12**  
**PACKAGE A1**

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

| HVAC LEGEND |                           |        |                                 |        |                              |        |                            | 3.        |             |      |
|-------------|---------------------------|--------|---------------------------------|--------|------------------------------|--------|----------------------------|-----------|-------------|------|
| SYMBOL      | DESCRIPTION               | SYMBOL | DESCRIPTION                     | SYMBOL | DESCRIPTION                  | SYMBOL | DESCRIPTION                | 2.        |             |      |
| — □ —       | SUPPLY AIR GRILLE         | ■      | 6" SUPPLY AIR BOOT ABOVE        | — □ —  | 14"x8" RETURN AIR GRILLE     | — □ —  | RETURN AIR STACK ABOVE     | 1.        |             |      |
| — ■ —       | SUPPLY AIR GRILLE 6" BOOT | ○      | SUPPLY AIR STACK FROM 2nd FLOOR | — □ —  | 30"x8" RETURN AIR GRILLE     | — □ —  | RETURN AIR STACK 2nd FLOOR | No.       | Description | Date |
| — ■ —       | SUPPLY AIR BOOT ABOVE     | ■      | 6" SUPPLY AIR STACK 2nd FLOOR   | — □ —  | FRA- FLOOR RETURN AIR GRILLE | — □ —  | REDUCER                    | REVISIONS |             |      |

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|                                                                   |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                         |              |
|-------------------------------------------------------------------|--|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------|--------------|
| Client<br><b>GREENPARK HOMES</b>                                  |  | <div><b>HVACDESIGNS LTD.</b></div> <div>375 Finley Ave. Suite 202 - Ajax, Ontario<br/>L1S 2E2 Tel. 905.619.2300 - 905.420.5300 Fax 905.619.2375<br/>Email: info@hvacadesigns.ca<br/>Web: www.hvacadesigns.ca<br/>Specializing in Residential Mechanical Design Services</div> <div>Installation to comply with the latest Ontario Building Code. All supply<br/>branch outlets shall be equipped with a manual balancing damper.<br/>Ductwork which passes through the garage or unheated spaces shall be<br/>adequately insulated and be gas-proofed.</div> | Sheet Title<br><b>ELEVATIONS &amp; OPT GUEST<br/>HEATING<br/>LAYOUT</b> |              |
| Project Name<br><b>RUSSELL GARDENS PH 4<br/>HAMILTON, ONTARIO</b> |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Date<br><b>JULY/2021</b>                                                |              |
| WOB<br><b>SPRINGFIELD 3     3744 sqft</b>                         |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Scale<br><b>3/16" = 1'-0"</b>                                           |              |
|                                                                   |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | BCIN# 19669                                                             |              |
|                                                                   |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | LO#                                                                     | <b>91951</b> |