

SITE NAME: RUSSEL GARDENS PH 4  
BUILDER: GREENPARK HOMESWUB  
TYPE: SPRINGFIELD 3S

GFA: 3631

DATE: Apr-21  
LO# 90166WINTER NATURAL AIR CHANGE RATE 0.310  
SUMMER NATURAL AIR CHANGE RATE 0.111HEAT LOSS AT \*F. 71  
HEAT GAIN AT \*F. 13CSA-F280-12  
SB-12 PACKAGE A1

| ROOM USE                       | EXP. WALL | CLG. HT. | MBR  | ENS  | BED-2 | BED-3 | BED-4 | ENS-3 | FLEX | ENS-4 |      |     |
|--------------------------------|-----------|----------|------|------|-------|-------|-------|-------|------|-------|------|-----|
|                                |           |          | 42   | 30   | 34    | 37    | 23    | 0     | 20   | 6     |      |     |
|                                |           |          | 9    | 9    | 9     | 9     | 9     | 9     | 9    | 9     |      |     |
| FACTORS                        |           |          |      |      |       |       |       |       |      |       |      |     |
| GRS.WALL AREA                  | LOSS      | GAIN     | 378  | 270  | 306   | 333   | 207   | 0     | 180  | 54    |      |     |
| GLAZING                        | LOSS      | GAIN     |      |      |       |       |       |       |      |       |      |     |
| NORTH                          | 19.8      | 16.0     | 0    | 0    | 0     | 0     | 0     | 0     | 32   | 633   | 511  | 0   |
| EAST                           | 19.8      | 41.6     | 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   |
| WEST                           | 19.8      | 41.6     | 32   | 633  | 1330  | 31    | 613   | 1288  | 0    | 0     | 0    | 0   |
| SKYLT.                         | 34.6      | 101.5    | 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   |
| NET EXPOSED WALL               | 4.1       | 0.8      | 346  | 1434 | 260   | 239   | 991   | 180   | 148  | 614   | 111  | 47  |
| NET EXPOSED BSMT WALL ABOVE GR | 3.3       | 0.6      | 0    | 0    | 0     | 0     | 0     | 0     | 0    | 0     | 0    | 0   |
| EXPOSED CLG                    | 1.2       | 0.6      | 346  | 412  | 203   | 221   | 263   | 130   | 0    | 0     | 0    | 0   |
| NO ATTIC EXPOSED CLG           | 2.6       | 1.3      | 0    | 0    | 0     | 0     | 0     | 0     | 260  | 310   | 153  | 120 |
| EXPOSED FLOOR                  | 2.4       | 0.4      | 0    | 0    | 0     | 0     | 0     | 0     | 0    | 0     | 0    | 0   |
| BASEMENT/CRAWL HEAT LOSS       |           |          | 0    | 0    | 0     | 0     | 0     | 0     | 159  | 377   | 68   | 0   |
| SLAB ON GRADE HEAT LOSS        |           |          | 0    | 0    | 0     | 0     | 0     | 0     | 0    | 0     | 0    | 0   |
| SUBTOTAL HT LOSS               |           |          | 2479 | 1867 | 3245  | 2860  | 1531  | 303   | 1933 | 476   |      |     |
| SUB TOTAL HT GAIN              |           |          |      | 1793 |       | 2874  | 3231  | 751   |      | 843   |      | 280 |
| LEVEL FACTOR / MULTIPLIER      | 0.20      | 0.25     |      | 0.20 | 0.25  | 0.20  | 0.25  | 0.20  | 0.25 | 0.20  | 0.25 |     |
| AIR CHANGE HEAT LOSS           |           |          | 630  | 475  | 825   | 727   | 389   | 77    | 491  | 121   |      |     |
| AIR CHANGE HEAT GAIN           |           |          | 120  | 107  | 193   | 217   | 60    | 6     | 57   | 19    |      |     |
| DUCT LOSS                      |           |          | 0    | 0    | 407   | 0     | 0     | 38    | 242  | 0     |      |     |
| DUCT GAIN                      |           |          | 0    | 0    | 381   | 0     | 0     | 9     | 141  | 0     |      |     |
| HEAT GAIN PEOPLE               | 240       | 2        | 480  | 0    | 1     | 240   | 1     | 240   | 0    | 0     | 0    | 0   |
| HEAT GAIN APPLIANCES/LIGHTS    |           |          | 506  | 0    | 506   | 506   | 506   | 0     | 0    | 0     | 0    | 0   |
| TOTAL HT LOSS BTU/H            |           |          | 3110 | 2342 | 4476  | 3687  | 1921  | 418   | 2665 | 597   |      |     |
| TOTAL HT GAIN x 1.3 BTU/H      |           |          | 3763 | 2216 | 5453  | 5451  | 2011  | 132   | 2010 | 389   |      |     |

| ROOM USE                       | EXP. WALL | CLG. HT. | FAM  | LV/DN | KT/BF | L/H/G | LND  | G-E/PD | FOY  | MUD  |      |     |
|--------------------------------|-----------|----------|------|-------|-------|-------|------|--------|------|------|------|-----|
|                                |           |          | 39   | 35    | 42    | 25    | 0    | 6      | 18   | 27   |      |     |
|                                |           |          | 10   | 10    | 10    | 11    | 9    | 10     | 11   | 11   |      |     |
| FACTORS                        |           |          |      |       |       |       |      |        |      |      |      |     |
| GRS.WALL AREA                  | LOSS      | GAIN     | 390  | 350   | 420   | 275   | 0    | 60     | 198  | 287  |      |     |
| GLAZING                        | LOSS      | GAIN     |      |       |       |       |      |        |      |      |      |     |
| NORTH                          | 19.8      | 16.0     | 0    | 0     | 0     | 0     | 0    | 0      | 0    | 8    | 158  | 128 |
| EAST                           | 19.8      | 41.6     | 0    | 0     | 0     | 56    | 1107 | 2327   | 0    | 0    | 0    | 0   |
| SOUTH                          | 19.8      | 24.9     | 0    | 0     | 0     | 0     | 0    | 0      | 7    | 138  | 291  | 0   |
| WEST                           | 19.8      | 41.6     | 40   | 791   | 1662  | 0     | 0    | 0      | 0    | 0    | 0    | 0   |
| SKYLT.                         | 34.6      | 101.5    | 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   |
| NET EXPOSED WALL               | 4.1       | 0.8      | 350  | 1451  | 263   | 314   | 1302 | 236    | 355  | 1472 | 267  | 219 |
| NET EXPOSED BSMT WALL ABOVE GR | 3.3       | 0.6      | 0    | 0     | 0     | 0     | 0    | 0      | 0    | 0    | 0    | 0   |
| EXPOSED CLG                    | 1.2       | 0.6      | 0    | 0     | 0     | 0     | 0    | 0      | 104  | 124  | 61   | 0   |
| NO ATTIC EXPOSED CLG           | 2.6       | 1.3      | 10   | 26    | 13    | 0     | 0    | 0      | 0    | 0    | 0    | 0   |
| EXPOSED FLOOR                  | 2.4       | 0.4      | 0    | 0     | 0     | 0     | 0    | 0      | 0    | 0    | 0    | 0   |
| BASEMENT/CRAWL HEAT LOSS       |           |          | 0    | 0     | 0     | 0     | 0    | 0      | 0    | 0    | 0    | 0   |
| SLAB ON GRADE HEAT LOSS        |           |          | 0    | 0     | 0     | 0     | 0    | 0      | 0    | 0    | 0    | 0   |
| SUBTOTAL HT LOSS               |           |          | 2267 | 2013  | 2757  | 2015  | 124  | 358    | 1703 | 1742 |      |     |
| SUB TOTAL HT GAIN              |           |          |      | 1938  |       | 2492  | 61   | 214    |      | 574  | 415  |     |
| LEVEL FACTOR / MULTIPLIER      | 0.30      | 0.44     |      | 0.30  | 0.44  | 0.30  | 0.44 | 0.20   | 0.25 | 0.30 | 0.44 |     |
| AIR CHANGE HEAT LOSS           |           |          | 996  | 885   | 1211  | 886   | 32   | 157    | 748  | 766  |      |     |
| AIR CHANGE HEAT GAIN           |           |          | 130  | 76    | 199   | 167   | 4    | 14     | 39   | 28   |      |     |
| DUCT LOSS                      |           |          | 0    | 0     | 0     | 0     | 0    | 0      | 0    | 0    |      |     |
| DUCT GAIN                      |           |          | 0    | 0     | 0     | 0     | 0    | 0      | 0    | 0    |      |     |
| HEAT GAIN PEOPLE               | 240       | 0        | 0    | 0     | 0     | 1     | 240  | 0      | 0    | 0    | 0    | 0   |
| HEAT GAIN APPLIANCES/LIGHTS    |           |          | 506  | 506   | 506   | 506   | 506  | 0      | 506  | 506  |      |     |
| TOTAL HT LOSS BTU/H            |           |          | 3264 | 2898  | 3968  | 2900  | 155  | 515    | 2451 | 2508 |      |     |
| TOTAL HT GAIN x 1.3 BTU/H      |           |          | 3346 | 2228  | 4774  | 4426  | 742  | 297    | 1454 | 1233 |      |     |

TOTAL HEAT GAIN BTU/H:

42120

TONS: 3.51

LOSS DUE TO VENTILATION LOAD BTU/H: 1455

STRUCTURAL HEAT LOSS: 56593

TOTAL COMBINED HEAT LOSS BTU/H: 58048

*Michael O'Rourke*

**SITE NAME: RUSSEL GARDENS PH 4**  
**BUILDER: GREENPARK HOMES**

WUB  
TYPE: SPRINGFIELD 3S

DATE: Apr-21

GFA: 3631 LO# 90166

|                   |        |                   |        |
|-------------------|--------|-------------------|--------|
| HEATING CFM       | 1504   | COOLING CFM       | 1504   |
| TOTAL HEAT LOSS   | 56,593 | TOTAL HEAT GAIN   | 41,856 |
| AIR FLOW RATE CFM | 26.58  | AIR FLOW RATE CFM | 35.93  |

|                                     |      |
|-------------------------------------|------|
| furnace pressure                    | 0.6  |
| furnace filter                      | 0.05 |
| a/c coil pressure                   | 0.2  |
| available pressure<br>for s/a & r/a | 0.35 |

|               |      |
|---------------|------|
| #*GOODMAN     |      |
| GMEC960804CNA | 80   |
| FAN SPEED     |      |
| LOW           | 868  |
| MEDLOW        | 978  |
| MEDIUM        | 1112 |
| MEDIUM HIGH   | 1504 |
| HIGH          | 1615 |

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

DESIGN CFM = 1504  
CFM @ .6" E.S.P

TEMPERATURE RISE 47 °F

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

| RUN #                     | 1    | 2    | 3    | 4     | 5     | 6     | 7     | 8 | 9    | 10   | 11    | 12   | 13    | 14    | 15    | 16    | 17   | 18     | 19   | 20   | 21   | 22   | 23   | 24   |
|---------------------------|------|------|------|-------|-------|-------|-------|---|------|------|-------|------|-------|-------|-------|-------|------|--------|------|------|------|------|------|------|
| ROOM NAME                 | MBR  | ENS  | ENS  | BED-2 | BED-3 | BED-4 | 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.              | 1.55 | 1.17 | 1.17 | 2.24  | 1.79  | 1.92  | 0.21  |   | 2.67 | 1.55 | 0.60  | 1.63 | 2.90  | 1.98  | 1.98  | 1.45  | 0.16 | 0.52   | 2.45 | 2.51 | 3.76 | 3.76 | 3.76 | 3.76 |
| CFM PER RUN HEAT          | 41   | 31   | 31   | 59    | 48    | 51    | 6     |   | 71   | 41   | 16    | 43   | 77    | 53    | 53    | 39    | 4    | 14     | 65   | 67   | 100  | 100  | 100  | 100  |
| RM GAIN MBH.              | 1.88 | 1.11 | 1.11 | 2.73  | 2.73  | 2.01  | 0.07  |   | 2.01 | 1.88 | 0.39  | 1.67 | 2.23  | 2.39  | 2.39  | 2.21  | 0.74 | 0.30   | 1.45 | 1.23 | 0.38 | 0.38 | 0.38 | 0.38 |
| CFM PER RUN COOLING       | 68   | 40   | 40   | 98    | 98    | 72    | 2     |   | 72   | 68   | 14    | 60   | 80    | 86    | 86    | 80    | 27   | 11     | 52   | 44   | 14   | 14   | 14   | 14   |
| 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  | 0.16  | 0.16  | 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   | 18   | 16   |
| EQUIVALENT LENGTH         | 150  | 140  | 170  | 170   | 150   | 150   | 170   |   | 190  | 160  | 140   | 160  | 90    | 100   | 120   | 130   | 150  | 100    | 140  | 130  | 150  | 110  | 130  | 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  | 148  | 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  | 0.12  | 0.11  | 0.1   | 0.11 | 0.14   | 0.09 | 0.1  | 0.08 | 0.12 | 0.11 | 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  | 356  | 356  | 301   | 245   | 260   | 69    |   | 362  | 209  | 184   | 316  | 393   | 270   | 270   | 286   | 46   | 161    | 477  | 492  | 510  | 510  | 510  | 510  |
| COOLING VELOCITY (ft/min) | 347  | 459  | 459  | 500   | 500   | 367   | 23    |   | 367  | 347  | 161   | 441  | 408   | 438   | 438   | 587   | 310  | 126    | 382  | 323  | 71   | 71   | 71   | 71   |
| 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.              | 3.76 | 2.24  | 1.79  | 1.63 | 1.45  | 0.21  |
| CFM PER RUN HEAT          | 100  | 59    | 48    | 43   | 39    | 6     |
| RM GAIN MBH.              | 0.38 | 2.73  | 2.73  | 1.67 | 2.21  | 0.07  |
| CFM PER RUN COOLING       | 14   | 98    | 98    | 60   | 80    | 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   | 190   | 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) | 510  | 301   | 245   | 316  | 286   | 69    |
| COOLING VELOCITY (ft/min) | 71   | 500   | 500   | 441  | 587   | 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<br>CFM | STATIC<br>PRESS. | ROUND<br>DUCT | RECT<br>DUCT |   |   | VELOCITY<br>(ft/min) |  | TRUNK<br>CFM | STATIC<br>PRESS. | ROUND<br>DUCT | RECT<br>DUCT |                       |   | VELOCITY<br>(ft/min) |   | TRUNK<br>CFM | STATIC<br>PRESS. | ROUND<br>DUCT | RECT<br>DUCT |   |   | VELOCITY<br>(ft/min) |   |  |
| TRUNK A               | 335          | 0.08             | 9.3           | 10           | x | 8 | 603                  |  | TRUNK G      | 0                | 0.00          | 0            | 0                     | x | 8                    | 0 | TRUNK O      | 0                | 0.05          | 0            | 0 | x | 8                    | 0 |  |
| TRUNK B               | 676          | 0.08             | 12.1          | 18           | x | 8 | 676                  |  | TRUNK H      | 0                | 0.00          | 0            | 0                     | x | 8                    | 0 | TRUNK P      | 0                | 0.05          | 0            | 0 | x | 8                    | 0 |  |
| TRUNK C               | 339          | 0.07             | 9.7           | 14           | x | 8 | 436                  |  | TRUNK I      | 0                | 0.00          | 0            | 0                     | x | 8                    | 0 | TRUNK Q      | 0                | 0.05          | 0            | 0 | x | 8                    | 0 |  |
| TRUNK D               | 570          | 0.07             | 11.7          | 18           | x | 8 | 570                  |  | TRUNK J      | 0                | 0.00          | 0            | 0                     | x | 8                    | 0 | TRUNK R      | 0                | 0.05          | 0            | 0 | x | 8                    | 0 |  |
| TRUNK E               | 829          | 0.07             | 13.5          | 22           | x | 8 | 678                  |  | TRUNK K      | 0                | 0.05          | 0            | 0                     | x | 8                    | 0 | TRUNK S      | 0                | 0.05          | 0            | 0 | x | 8                    | 0 |  |
| TRUNK F               | 0            | 0.00             | 0             | 0            | x | 8 | 0                    |  | TRUNK L      | 0                | 0.00          | 0            | 0                     | x | 8                    | 0 | TRUNK T      | 0                | 0.05          | 0            | 0 |   |                      |   |  |

|                    |      |      |      |      |      |      |      |      |      |       |       |       |       |       |      |    |
|--------------------|------|------|------|------|------|------|------|------|------|-------|-------|-------|-------|-------|------|----|
| RETURN AIR #       | 1    | 2    | 3    | 4    | 5    | 6    | 7    | 8    | 9    |       |       |       |       |       |      | BR |
| AIR VOLUME         | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0     | 0     | 0     | 0     | 0     | 219  |    |
| PLENUM PRESSURE    | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15  | 0.15  | 0.15  | 0.15  | 0.15  | 0.15 |    |
| ACTUAL DUCT LGH.   | 57   | 56   | 54   | 51   | 62   | 58   | 46   | 26   | 44   | 1     | 1     | 1     | 1     | 1     | 20   |    |
| EQUIVALENT LENGTH  | 245  | 155  | 195  | 235  | 195  | 245  | 245  | 240  | 220  | 0     | 0     | 1     | 0     | 1     | 265  |    |
| TOTAL EFFECTIVE LH | 302  | 211  | 249  | 286  | 257  | 303  | 291  | 266  | 264  | 1     | 1     | 1     | 1     | 1     | 285  |    |
| ADJUSTED PRESSURE  | 0.05 | 0.07 | 0.08 | 0.05 | 0.06 | 0.05 | 0.05 | 0.06 | 0.06 | 14.80 | 14.80 | 14.80 | 14.80 | 14.80 | 0.05 |    |
| ROUND DUCT SIZE    | 7    | 6.2  | 6.2  | 7    | 7    | 7    | 7    | 10.3 | 7    | 0     | 0     | 0     | 0     | 0     | 8.9  |    |
| INLET GRILL SIZE   | 8    | 8    | 8    | 8    | 8    | 8    | 6    | 8    | 8    | 0     | 0     | 0     | 0     | 0     | 8    |    |
|                    | X    | X    | X    | X    | X    | X    | X    | X    | X    | X     | X     | X     | X     | X     | X    |    |
| INLET GRILL SIZE   | 14   | 14   | 14   | 14   | 14   | 14   | 14   | 30   | 14   | 0     | 0     | 0     | 0     | 0     | 30   |    |

|         |      |      |      |    |   |    |     |
|---------|------|------|------|----|---|----|-----|
| TRUNK V | 0    | 0.05 | 0    | 0  | x | 8  | 0   |
| TRUNK W | 0    | 0.05 | 0    | 0  | x | 8  | 0   |
| TRUNK X | 909  | 0.05 | 15.2 | 26 | x | 8  | 629 |
| TRUNK Y | 375  | 0.05 | 10.9 | 14 | x | 8  | 482 |
| TRUNK Z | 595  | 0.05 | 13   | 20 | x | 8  | 536 |
| DROP    | 1504 | 0.05 | 18.4 | 24 | x | 14 | 645 |

TYPE: SPRINGFIELD 3S  
SITE NAME: RUSSEL GARDENS PH 4

LO # 90166  
WUB

**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 |       | 9.32.3.5. |
|-----------------------------------|-------|-----------|
| 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  | FACTOR | % LOSS |      |
| 95.4 CFM                                | X 71 F | X 1.08 | X      | 0.20 |

| 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                                  | 50 cfm low                                       |            |
| 80 % Sensible Efficiency @ 32 deg F (0 deg C) | <input checked="" type="checkbox"/> HVI Approved |            |

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

| BUILDER: GREENPARK HOMES |        |
|--------------------------|--------|
| Name:                    |        |
| Address:                 |        |
| City:                    |        |
| Telephone #:             | Fax #: |

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

| 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:                                                                                                         | April-21                |

| CSA F280-12 Residential Heat Loss and Heat Gain Calculations                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                       |                                                     |                                                                                                                                         |                                                                        |                   |                   |                                                     |                                                    |                                                                        |       |       |        |       |       |        |      |        |       |       |     |        |       |        |   |   |       |        |   |   |              |        |  |  |           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |  |                                |       |                                |       |                               |  |  |  |  |  |        |         |       |       |             |    |     |    |    |             |    |    |   |    |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|-----------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------|-------------------|-------------------|-----------------------------------------------------|----------------------------------------------------|------------------------------------------------------------------------|-------|-------|--------|-------|-------|--------|------|--------|-------|-------|-----|--------|-------|--------|---|---|-------|--------|---|---|--------------|--------|--|--|-----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--------------------------------|-------|--------------------------------|-------|-------------------------------|--|--|--|--|--|--------|---------|-------|-------|-------------|----|-----|----|----|-------------|----|----|---|----|
| Formula Sheet (For Air Leakage / Ventilation Calculation)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                       |                                                     |                                                                                                                                         |                                                                        |                   |                   |                                                     |                                                    |                                                                        |       |       |        |       |       |        |      |        |       |       |     |        |       |        |   |   |       |        |   |   |              |        |  |  |           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |  |                                |       |                                |       |                               |  |  |  |  |  |        |         |       |       |             |    |     |    |    |             |    |    |   |    |
| LO#: 90166                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Model: SPRINGFIELD 35 | Builder: GREENPARK HOMES                            | Date: 09/04/2021                                                                                                                        |                                                                        |                   |                   |                                                     |                                                    |                                                                        |       |       |        |       |       |        |      |        |       |       |     |        |       |        |   |   |       |        |   |   |              |        |  |  |           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |  |                                |       |                                |       |                               |  |  |  |  |  |        |         |       |       |             |    |     |    |    |             |    |    |   |    |
| <b>Volume Calculation</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                       |                                                     | <b>Air Change &amp; Delta T Data</b>                                                                                                    |                                                                        |                   |                   |                                                     |                                                    |                                                                        |       |       |        |       |       |        |      |        |       |       |     |        |       |        |   |   |       |        |   |   |              |        |  |  |           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |  |                                |       |                                |       |                               |  |  |  |  |  |        |         |       |       |             |    |     |    |    |             |    |    |   |    |
| <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>1547</td><td>9</td><td>13923</td></tr> <tr><td>First</td><td>1547</td><td>10</td><td>15470</td></tr> <tr><td>Second</td><td>2084</td><td>9</td><td>18756</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>48,149.0 ft³</td></tr> <tr><td colspan="3" style="text-align: right;">Total:</td><td>1363.4 m³</td></tr> </tbody> </table>                                                                                                                                                                                                                                                                     |                       |                                                     | Level                                                                                                                                   | Floor Area (ft²)                                                       | Floor Height (ft) | Volume (ft³)      | Bsmt                                                | 1547                                               | 9                                                                      | 13923 | First | 1547   | 10    | 15470 | Second | 2084 | 9      | 18756 | Third | 0   | 9      | 0     | Fourth | 0 | 9 | 0     | Total: |   |   | 48,149.0 ft³ | Total: |  |  | 1363.4 m³ | <table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td style="width:70%;">WINTER NATURAL AIR CHANGE RATE</td> <td style="width:30%;">0.310</td> </tr> <tr> <td>SUMMER NATURAL AIR CHANGE RATE</td> <td>0.111</td> </tr> </table><br><table border="1" style="width:100%; border-collapse: collapse;"> <tr> <th colspan="5" style="text-align: center;">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> <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> </table> |  | WINTER NATURAL AIR CHANGE RATE | 0.310 | SUMMER NATURAL AIR CHANGE RATE | 0.111 | 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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 1547                  | 9                                                   | 13923                                                                                                                                   |                                                                        |                   |                   |                                                     |                                                    |                                                                        |       |       |        |       |       |        |      |        |       |       |     |        |       |        |   |   |       |        |   |   |              |        |  |  |           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |  |                                |       |                                |       |                               |  |  |  |  |  |        |         |       |       |             |    |     |    |    |             |    |    |   |    |
| First                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 1547                  | 10                                                  | 15470                                                                                                                                   |                                                                        |                   |                   |                                                     |                                                    |                                                                        |       |       |        |       |       |        |      |        |       |       |     |        |       |        |   |   |       |        |   |   |              |        |  |  |           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |  |                                |       |                                |       |                               |  |  |  |  |  |        |         |       |       |             |    |     |    |    |             |    |    |   |    |
| Second                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 2084                  | 9                                                   | 18756                                                                                                                                   |                                                                        |                   |                   |                                                     |                                                    |                                                                        |       |       |        |       |       |        |      |        |       |       |     |        |       |        |   |   |       |        |   |   |              |        |  |  |           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |  |                                |       |                                |       |                               |  |  |  |  |  |        |         |       |       |             |    |     |    |    |             |    |    |   |    |
| Third                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 0                     | 9                                                   | 0                                                                                                                                       |                                                                        |                   |                   |                                                     |                                                    |                                                                        |       |       |        |       |       |        |      |        |       |       |     |        |       |        |   |   |       |        |   |   |              |        |  |  |           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |  |                                |       |                                |       |                               |  |  |  |  |  |        |         |       |       |             |    |     |    |    |             |    |    |   |    |
| Fourth                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 0                     | 9                                                   | 0                                                                                                                                       |                                                                        |                   |                   |                                                     |                                                    |                                                                        |       |       |        |       |       |        |      |        |       |       |     |        |       |        |   |   |       |        |   |   |              |        |  |  |           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |  |                                |       |                                |       |                               |  |  |  |  |  |        |         |       |       |             |    |     |    |    |             |    |    |   |    |
| Total:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                       |                                                     | 48,149.0 ft³                                                                                                                            |                                                                        |                   |                   |                                                     |                                                    |                                                                        |       |       |        |       |       |        |      |        |       |       |     |        |       |        |   |   |       |        |   |   |              |        |  |  |           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |  |                                |       |                                |       |                               |  |  |  |  |  |        |         |       |       |             |    |     |    |    |             |    |    |   |    |
| Total:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                       |                                                     | 1363.4 m³                                                                                                                               |                                                                        |                   |                   |                                                     |                                                    |                                                                        |       |       |        |       |       |        |      |        |       |       |     |        |       |        |   |   |       |        |   |   |              |        |  |  |           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |  |                                |       |                                |       |                               |  |  |  |  |  |        |         |       |       |             |    |     |    |    |             |    |    |   |    |
| WINTER NATURAL AIR CHANGE RATE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 0.310                 |                                                     |                                                                                                                                         |                                                                        |                   |                   |                                                     |                                                    |                                                                        |       |       |        |       |       |        |      |        |       |       |     |        |       |        |   |   |       |        |   |   |              |        |  |  |           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |  |                                |       |                                |       |                               |  |  |  |  |  |        |         |       |       |             |    |     |    |    |             |    |    |   |    |
| SUMMER NATURAL AIR CHANGE RATE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 0.111                 |                                                     |                                                                                                                                         |                                                                        |                   |                   |                                                     |                                                    |                                                                        |       |       |        |       |       |        |      |        |       |       |     |        |       |        |   |   |       |        |   |   |              |        |  |  |           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |  |                                |       |                                |       |                               |  |  |  |  |  |        |         |       |       |             |    |     |    |    |             |    |    |   |    |
| 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>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                       |                                                     | <b>6.2.6 Sensible Gain due to Air Leakage</b>                                                                                           |                                                                        |                   |                   |                                                     |                                                    |                                                                        |       |       |        |       |       |        |      |        |       |       |     |        |       |        |   |   |       |        |   |   |              |        |  |  |           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |  |                                |       |                                |       |                               |  |  |  |  |  |        |         |       |       |             |    |     |    |    |             |    |    |   |    |
| $HL_{airb} = LR_{airh} \times \frac{V_b}{3.6} \times DTD_h \times 1.2$ <p>0.310 x 378.73 x 39 °C x 1.2 = 5519 W</p> <p>= 18832 Btu/h</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                       |                                                     | $HG_{salb} = LR_{airc} \times \frac{V_b}{3.6} \times DTD_c \times 1.2$ <p>= 0.111 x 378.73 x 7 °C x 1.2 = 358 W</p> <p>= 1222 Btu/h</p> |                                                                        |                   |                   |                                                     |                                                    |                                                                        |       |       |        |       |       |        |      |        |       |       |     |        |       |        |   |   |       |        |   |   |              |        |  |  |           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |  |                                |       |                                |       |                               |  |  |  |  |  |        |         |       |       |             |    |     |    |    |             |    |    |   |    |
| <b>5.2.3.2 Heat Loss due to Mechanical Ventilation</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                       |                                                     | <b>6.2.7 Sensible heat Gain due to Ventilation</b>                                                                                      |                                                                        |                   |                   |                                                     |                                                    |                                                                        |       |       |        |       |       |        |      |        |       |       |     |        |       |        |   |   |       |        |   |   |              |        |  |  |           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |  |                                |       |                                |       |                               |  |  |  |  |  |        |         |       |       |             |    |     |    |    |             |    |    |   |    |
| $HL_{vairb} = PVC \times DTD_h \times 1.08 \times (1 - E)$ <p>95 CFM x 71 °F x 1.08 x 0.20 = 1455 Btu/h</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                       |                                                     | $HL_{vairb} = PVC \times DTD_h \times 1.08 \times (1 - E)$ <p>95 CFM x 13 °F x 1.08 x 0.20 = 264 Btu/h</p>                              |                                                                        |                   |                   |                                                     |                                                    |                                                                        |       |       |        |       |       |        |      |        |       |       |     |        |       |        |   |   |       |        |   |   |              |        |  |  |           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |  |                                |       |                                |       |                               |  |  |  |  |  |        |         |       |       |             |    |     |    |    |             |    |    |   |    |
| <b>5.2.3.3 Calculation of Air Change Heat Loss for Each Room (Floor Multiplier Section)</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                       |                                                     |                                                                                                                                         |                                                                        |                   |                   |                                                     |                                                    |                                                                        |       |       |        |       |       |        |      |        |       |       |     |        |       |        |   |   |       |        |   |   |              |        |  |  |           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |  |                                |       |                                |       |                               |  |  |  |  |  |        |         |       |       |             |    |     |    |    |             |    |    |   |    |
| $HL_{airr} = Level\ Factor \times HL_{airbv} \times \{(HL_{agcr} + HL_{bgcr}) \div (HL_{agclevel} + HL_{bgclevel})\}$ <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 / HL<sub>level</sub>)</th> </tr> </thead> <tbody> <tr><td>1</td><td>0.5</td><td rowspan="5" style="text-align: center;">18,832</td><td>9,400</td><td>1.002</td></tr> <tr><td>2</td><td>0.3</td><td>12,855</td><td>0.439</td></tr> <tr><td>3</td><td>0.2</td><td>14,819</td><td>0.254</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 / HL <sub>level</sub> ) | 1     | 0.5   | 18,832 | 9,400 | 1.002 | 2      | 0.3  | 12,855 | 0.439 | 3     | 0.2 | 14,819 | 0.254 | 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 / HL <sub>level</sub> ) |                   |                   |                                                     |                                                    |                                                                        |       |       |        |       |       |        |      |        |       |       |     |        |       |        |   |   |       |        |   |   |              |        |  |  |           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |  |                                |       |                                |       |                               |  |  |  |  |  |        |         |       |       |             |    |     |    |    |             |    |    |   |    |
| 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 0.5                   | 18,832                                              | 9,400                                                                                                                                   | 1.002                                                                  |                   |                   |                                                     |                                                    |                                                                        |       |       |        |       |       |        |      |        |       |       |     |        |       |        |   |   |       |        |   |   |              |        |  |  |           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |  |                                |       |                                |       |                               |  |  |  |  |  |        |         |       |       |             |    |     |    |    |             |    |    |   |    |
| 2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 0.3                   |                                                     | 12,855                                                                                                                                  | 0.439                                                                  |                   |                   |                                                     |                                                    |                                                                        |       |       |        |       |       |        |      |        |       |       |     |        |       |        |   |   |       |        |   |   |              |        |  |  |           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |  |                                |       |                                |       |                               |  |  |  |  |  |        |         |       |       |             |    |     |    |    |             |    |    |   |    |
| 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 0.2                   |                                                     | 14,819                                                                                                                                  | 0.254                                                                  |                   |                   |                                                     |                                                    |                                                                        |       |       |        |       |       |        |      |        |       |       |     |        |       |        |   |   |       |        |   |   |              |        |  |  |           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |  |                                |       |                                |       |                               |  |  |  |  |  |        |         |       |       |             |    |     |    |    |             |    |    |   |    |
| 4                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 0                     |                                                     | 0                                                                                                                                       | 0.000                                                                  |                   |                   |                                                     |                                                    |                                                                        |       |       |        |       |       |        |      |        |       |       |     |        |       |        |   |   |       |        |   |   |              |        |  |  |           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |  |                                |       |                                |       |                               |  |  |  |  |  |        |         |       |       |             |    |     |    |    |             |    |    |   |    |
| 5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 0                     |                                                     | 0                                                                                                                                       | 0.000                                                                  |                   |                   |                                                     |                                                    |                                                                        |       |       |        |       |       |        |      |        |       |       |     |        |       |        |   |   |       |        |   |   |              |        |  |  |           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |  |                                |       |                                |       |                               |  |  |  |  |  |        |         |       |       |             |    |     |    |    |             |    |    |   |    |

**HEAT LOSS AND GAIN SUMMARY SHEET**

|                              |                  |                                  |
|------------------------------|------------------|----------------------------------|
| <b>MODEL:</b> SPRINGFIELD 3S | <b>WUB</b>       | <b>BUILDER:</b> GREENPARK HOMES  |
| <b>SFQT:</b> 3631            | <b>LO#</b> 90166 | <b>SITE:</b> RUSSEL GARDENS PH 4 |

**DESIGN ASSUMPTIONS**

|                      |           |                                |           |
|----------------------|-----------|--------------------------------|-----------|
| <b>HEATING</b>       | <b>°F</b> | <b>COOLING</b>                 | <b>°F</b> |
| OUTDOOR DESIGN TEMP. | 1         | OUTDOOR DESIGN TEMP.           | 88        |
| INDOOR DESIGN TEMP.  | 72        | INDOOR DESIGN TEMP. (MAX 75°F) | 75        |

**BUILDING DATA**

|                                            |                       |                                  |          |
|--------------------------------------------|-----------------------|----------------------------------|----------|
| <b>ATTACHMENT:</b>                         | DETACHED              | <b># OF STORIES (+BASEMENT):</b> | 3        |
| <b>FRONT FACES:</b>                        | EAST                  | <b>ASSUMED (Y/N):</b>            | Y        |
| <b>AIR CHANGES PER HOUR:</b>               | 3.57                  | <b>ASSUMED (Y/N):</b>            | Y        |
| <b>AIR TIGHTNESS CATEGORY:</b>             | AVERAGE               | <b>ASSUMED (Y/N):</b>            | Y        |
| <b>WIND EXPOSURE:</b>                      | SHELTERED             | <b>ASSUMED (Y/N):</b>            | Y        |
| <b>HOUSE VOLUME (ft³):</b>                 | 48149.0               | <b>ASSUMED (Y/N):</b>            | Y        |
| <b>INTERNAL SHADING:</b>                   | BLINDS/CURTAINS       | <b>ASSUMED OCCUPANTS:</b>        | 6        |
| <b>INTERIOR LIGHTING LOAD (Btu/h/ft²):</b> | 1.27                  | <b>DC BRUSHLESS MOTOR (Y/N):</b> | Y        |
| <b>FOUNDATION CONFIGURATION</b>            | BCIN_1                | <b>DEPTH BELOW GRADE:</b>        | 6.0 ft   |
| <b>LENGTH:</b> 55.0 ft                     | <b>WIDTH:</b> 40.0 ft | <b>EXPOSED PERIMETER:</b>        | 173.0 ft |

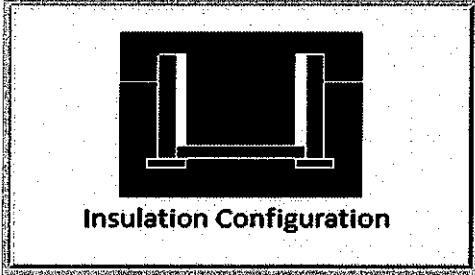
| 2012 OBC - COMPLIANCE PACKAGE                                              |  | Compliance Package A1 |           |
|----------------------------------------------------------------------------|--|-----------------------|-----------|
| Component                                                                  |  | 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

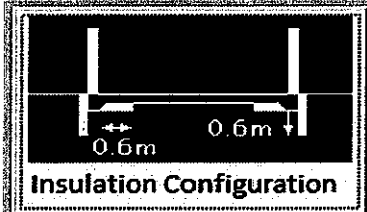
| Weather Station Description    |                                           |                                                                                                                 |
|--------------------------------|-------------------------------------------|-----------------------------------------------------------------------------------------------------------------|
| 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):              | 16.8                                      | <br>Insulation Configuration |
| Floor Width (m):               | 12.2                                      |                                                                                                                 |
| Exposed Perimeter (m):         | 52.7                                      |                                                                                                                 |
| Wall Height (m):               | 2.7                                       |                                                                                                                 |
| Depth Below Grade (m):         | 1.83                                      |                                                                                                                 |
| Window Area (m <sup>2</sup> ): | 1.4                                       |                                                                                                                 |
| Door Area (m <sup>2</sup> ):   | 3.7                                       |                                                                                                                 |
| Radiant Slab                   |                                           |                                                                                                                 |
| Heated Fraction of the Slab:   | 0                                         |                                                                                                                 |
| Fluid Temperature (°C):        | 33                                        |                                                                                                                 |
| Design Months                  |                                           |                                                                                                                 |
| Heating Month                  | 1                                         |                                                                                                                 |
| Foundation Loads               |                                           |                                                                                                                 |
| Heating Load (Watts):          |                                           | 1683                                                                                                            |

TYPE: SPRINGFIELD 3S  
LO# 90166

WUB

## 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):                  | 0.6                                       | <br>Insulation Configuration |
| Width (m):                   | 4.6                                       |                                                                                                                 |
| 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):        |                                           | 39                                                                                                              |

TYPE: SPRINGFIELD 3S  
LO# 90166

WUB

## Air Infiltration Residential Load Calculator

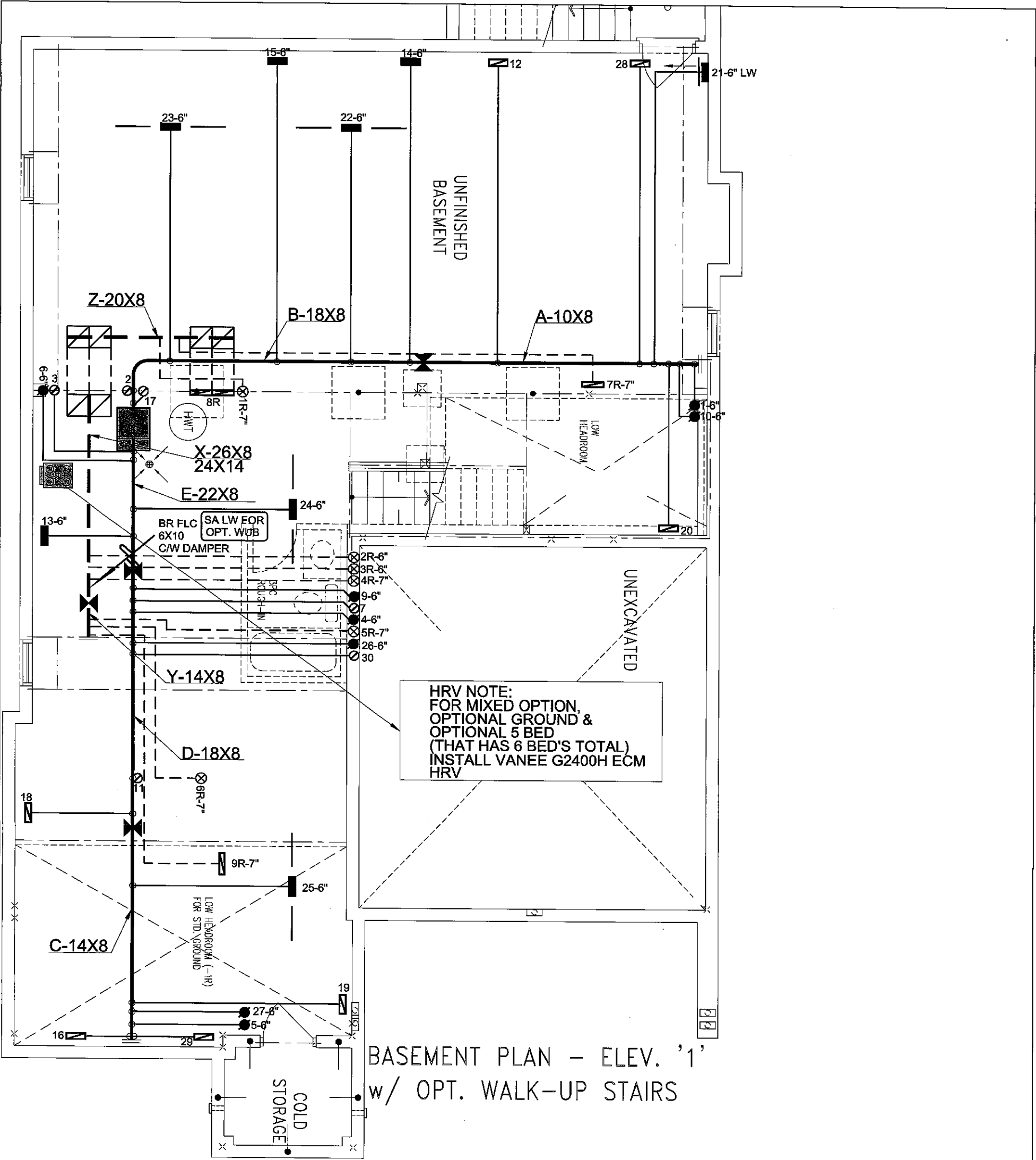
Supplemental tool for CAN/CSA-F280

| 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):       | 6.71                       |                        |       |
| Building Configuration            |                            |                        |       |
| Type:                             | Detached                   |                        |       |
| Number of Stories:                | Two                        |                        |       |
| Foundation:                       | Full                       |                        |       |
| House Volume (m <sup>3</sup> ):   | 1363.4                     |                        |       |
| Air Leakage/Ventilation           |                            |                        |       |
| Air Tightness Type:               | Present (1961-) (3.57 ACH) |                        |       |
| Custom BDT Data:                  | ELA @ 10 Pa.               | 1817.5 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): | 0.310                      |                        |       |
| Cooling Air Leakage Rate (ACH/H): | 0.111                      |                        |       |

TYPE: SPRINGFIELD 3S  
LO# 90166

WUB





BASEMENT PLAN - ELEV. '1'  
w/ OPT. WALK-UP STAIRS

I MICHAEL O'ROURKE HAVE REVIEWED AND TAKE RESPONSIBILITY FOR THE DESIGN WORK AND AM QUALIFIED UNDER DIVISION C, 5.2.5 OF THE BUILDING CODE.  
*Michael O'Rourke*  
Michael O'Rourke, BCIN# 19669  
HVAC DESIGNS LTD.

WUB  
CSA-F280-12  
PACKAGE A1

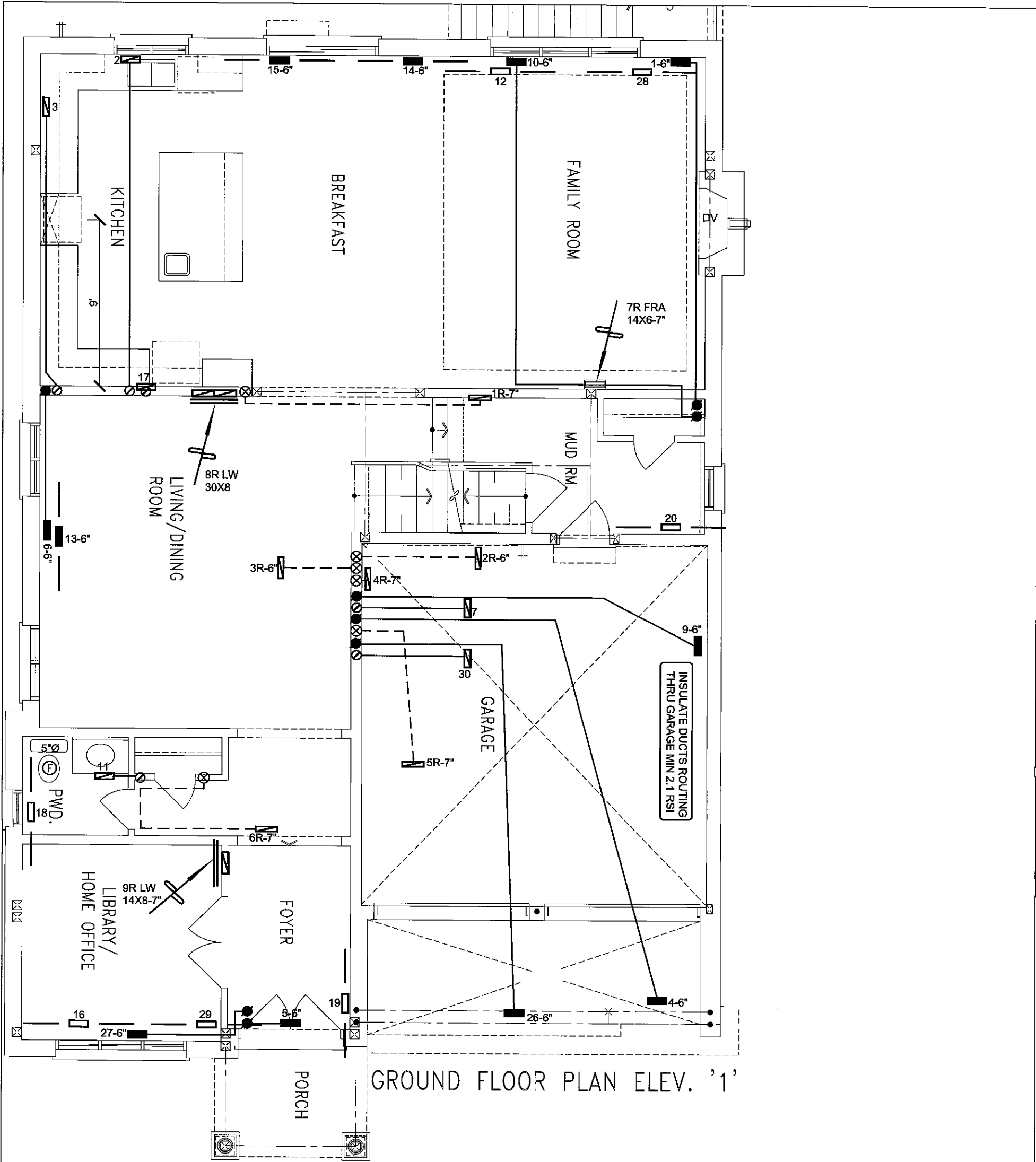
| HVAC LEGEND |                           |        |                                 |        |                              |        | 3.                         |      |
|-------------|---------------------------|--------|---------------------------------|--------|------------------------------|--------|----------------------------|------|
| 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.  |
|             | SUPPLY AIR BOOT ABOVE     |        | 6" SUPPLY AIR STACK 2nd FLOOR   |        | FRA- FLOOR RETURN AIR GRILLE |        | REDUCER                    | Date |
|             |                           |        |                                 |        |                              |        | REVISIONS                  |      |

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Client  
**GREENPARK HOMES**  
Project Name  
**RUSSELL GARDENS PH 4  
HAMILTON, ONTARIO**  
  
**WUB  
SPRINGFIELD 3S 3631 sqft**

**HVAC DESIGNS LTD.**  
375 Finley Ave. Suite 202 - Ajax, Ontario  
L1S 2E2 Tel. 905.619.2300 - 905.420.5300 Fax 905.619.2375  
Email: info@hvacdsgns.ca  
Web: www.hvacdesigns.ca  
Specializing in Residential Mechanical Design Services  
Installation to comply with the latest Ontario Building Code. All supply branch outlets shall be equipped with a manual balancing damper. Ductwork which passes through the garage or unheated spaces shall be adequately insulated and be gas-proofed.

|                                    |         |                        |                                                                                                                                                              |   |                               |   |      |             |               |
|------------------------------------|---------|------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|---|-------------------------------|---|------|-------------|---------------|
| HEAT LOSS 58048 BTU/H<br>UNIT DATA |         | # OF RUNS S/A R/A FANS |                                                                                                                                                              |   | Sheet Title                   |   |      |             |               |
| MAKE                               | GOODMAN | 3RD FLOOR              |                                                                                                                                                              |   | BASEMENT<br>HEATING<br>LAYOUT |   |      |             |               |
| MODEL                              |         | 2ND FLOOR              | 14                                                                                                                                                           | 6 |                               |   | 5    |             |               |
| GMEC960804CNA                      |         | 1ST FLOOR              | 10                                                                                                                                                           | 3 |                               |   | 2    |             |               |
| INPUT                              | 80      | MBTU/H                 | BASEMENT                                                                                                                                                     | 5 | 1                             | 0 | Date | APR/2021    |               |
| OUTPUT                             | 76.8    | MBTU/H                 | 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       | 3/16" = 1'-0" |
| COOLING                            | 3.5     | TONS                   |                                                                                                                                                              |   |                               |   |      | BCIN# 19669 |               |
| FAN SPEED                          | 1504    | cfm @<br>0.6" w.c.     |                                                                                                                                                              |   |                               |   |      | LO#         | 90166         |



GROUND FLOOR PLAN ELEV. '1'

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.

**WUB**  
**CSA-F280-12**  
**PACKAGE A1**

| HVAC LEGEND |                           |        |                                 |        |                              | 3.     |                            |                      |
|-------------|---------------------------|--------|---------------------------------|--------|------------------------------|--------|----------------------------|----------------------|
| SYMBOL      | DESCRIPTION               | SYMBOL | DESCRIPTION                     | SYMBOL | DESCRIPTION                  | SYMBOL | DESCRIPTION                |                      |
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| REVISIONS   |                           |        |                                 |        |                              |        |                            |                      |

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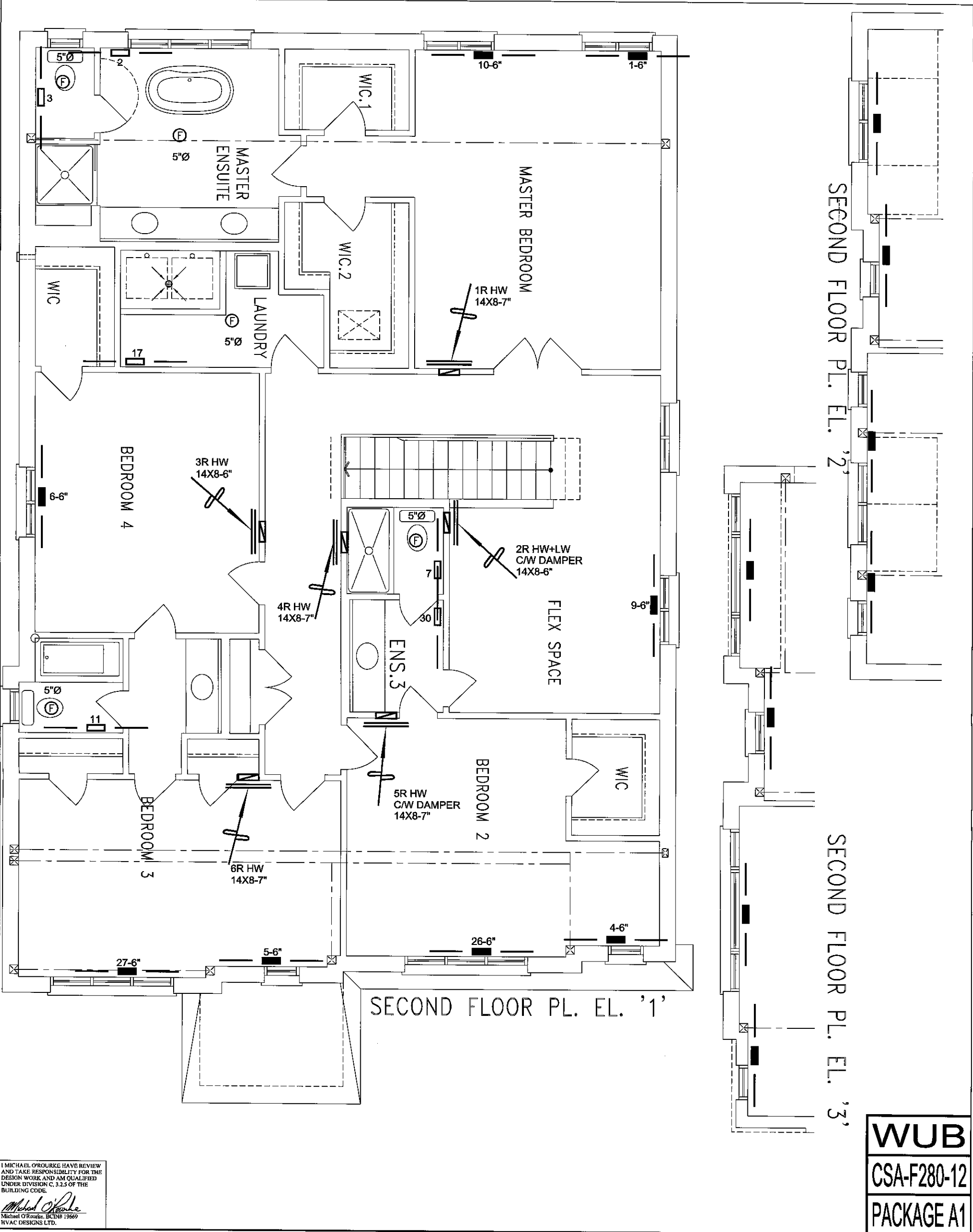
Sheet Title  
**FIRST FLOOR  
HEATING  
LAYOUT**

Date  
**APR/2021**

Scale  
**3/16" = 1'-0"**

BCIN# 19669

LO# **90166**



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.

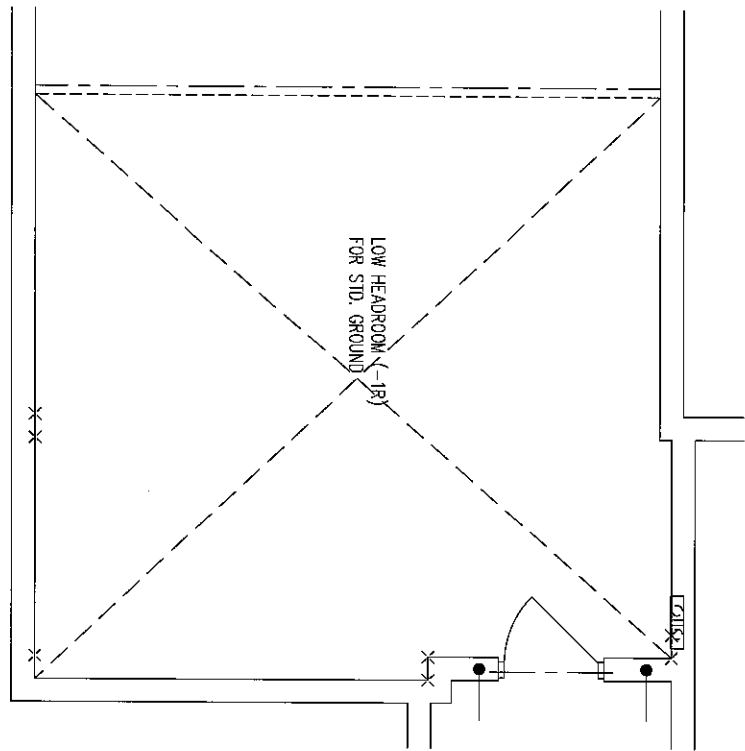
*Michael O'Rourke*  
Michael O'Rourke, BCIN# 19669  
HVAC DESIGNS LTD.

WUB  
CSA-F280-12  
PACKAGE A1

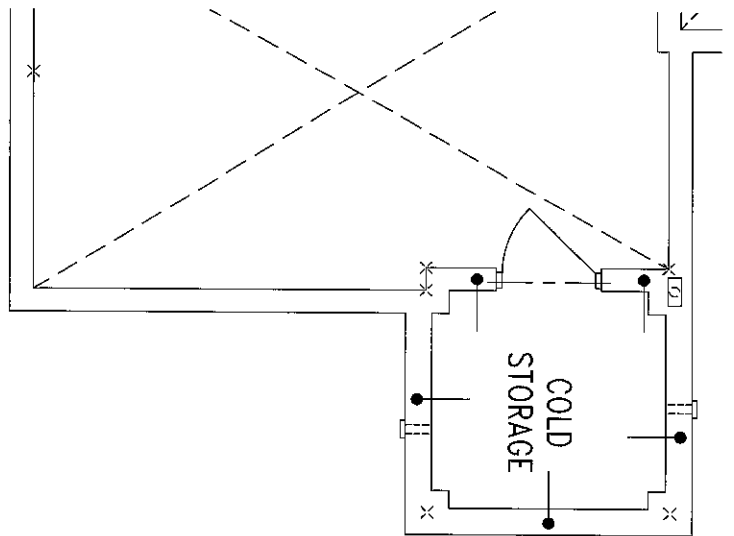
| HVAC LEGEND |                           |        |                                 |        |                              |        | 3.                         |                      |
|-------------|---------------------------|--------|---------------------------------|--------|------------------------------|--------|----------------------------|------------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

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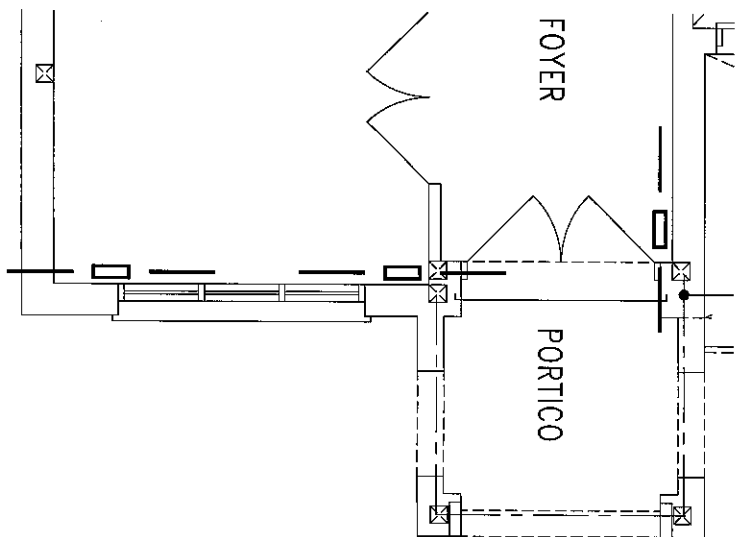
|                                           |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                   |               |
|-------------------------------------------|--|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------|---------------|
| Client                                    |  | <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.<br/>Ductwork which passes through the garage or unheated spaces shall be adequately insulated and be gas-proofed.</p></div> | Sheet Title                       |               |
| GREENPARK HOMES                           |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | SECOND FLOOR<br>HEATING<br>LAYOUT |               |
| Project Name                              |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Date                              | APR/2021      |
| RUSSELL GARDENS PH 4<br>HAMILTON, ONTARIO |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Scale                             | 3/16" = 1'-0" |
| WUB<br>SPRINGFIELD 3S 3631 sqft           |  | BCIN# 19669                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                   |               |
|                                           |  | LO#                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 90166                             |               |



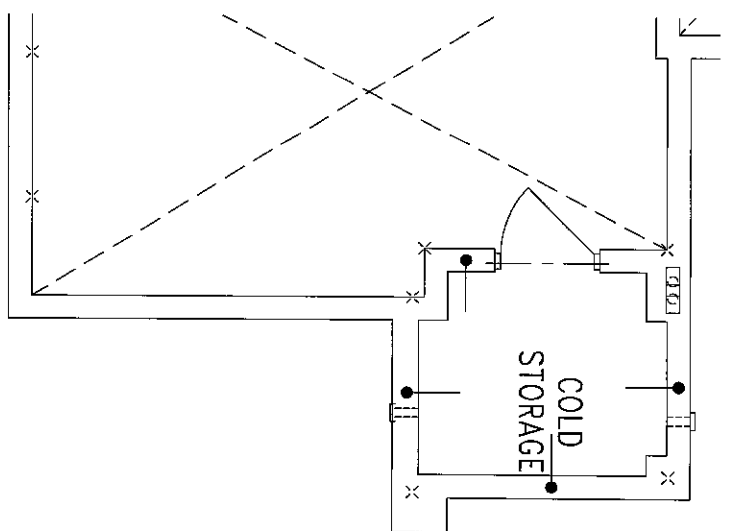
PART. BASEMENT PLAN ELEV. '1'  
FOR OPT. GUEST SUITE COND.



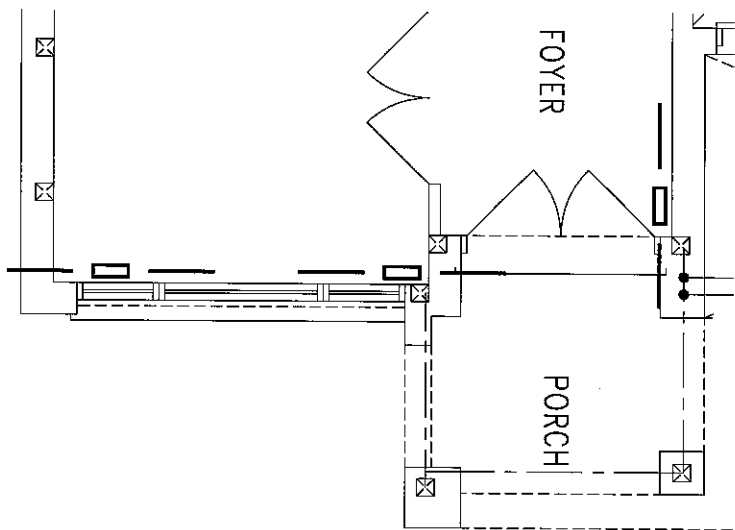
BASEMENT PLAN ELEV. '2'



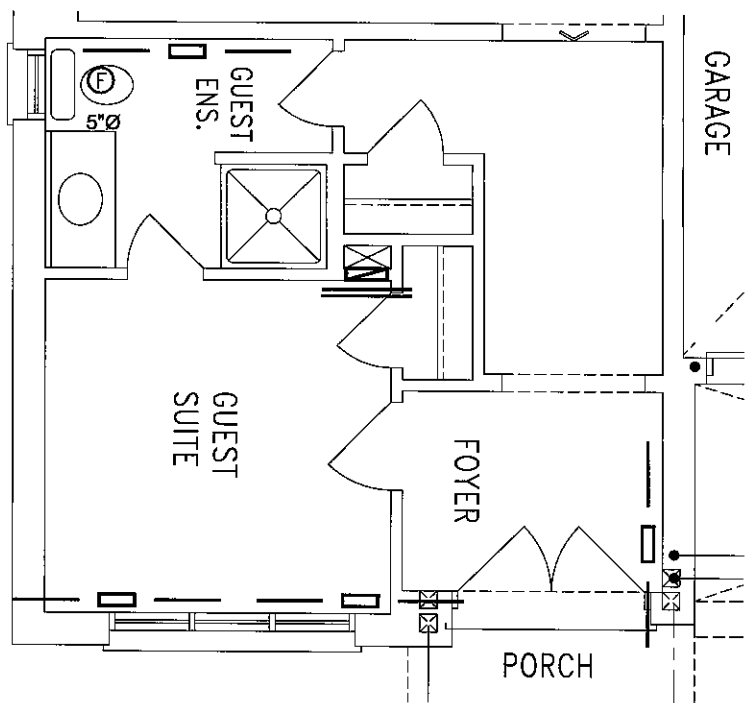
GROUND FLOOR PLAN ELEV. '2'



BASEMENT PLAN ELEV. '3'



GROUND FLOOR PLAN ELEV. '3'



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

**WUB**  
**CSA-F280-12**  
**PACKAGE A1**

I MICHAEL O'ROURKE HAVE REVIEWED AND TAKE RESPONSIBILITY FOR THE DESIGN WORK AND AM QUALIFIED UNDER DIVISION C, 32.5 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 |
|             | SUPPLY AIR BOOT ABOVE     |        | 6" SUPPLY AIR STACK 2nd FLOOR   |        | FRA- FLOOR RETURN AIR GRILLE |        | REDUCER                    | Date |             |

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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 | 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>APR/2021</b>                                                 | Scale<br><b>3/16" = 1'-0"</b> |
| <b>WUB<br/>SPRINGFIELD 3S 3631 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.                                                           |                                                                         | BCIN# 19669                   |
|                                                                   |  |                                                                                                                                                                                                                                                                                                                   |                                                                         | <b>LO# 90166</b>              |