



Load Short Form

Down

MechaniCalcs LLC.

Job:
Date: Jun 12, 2012
By: Jonathan Jacobs

4062 SW 54th Terrace, Ocala, FL 34474 Phone: 386-503-0449 Email: MechaniCalcs@gmail.com Web: www.MechaniCalcsLLC.com

Project Information

For: Rambo Residence
305 S. 27th St, Flagler Beach, FL 32136

Design Information

| | Htg | Clg | Method | Infiltration |
|-----------------------------|-----|-----|----------------------|--------------|
| Outside db (°F) | 39 | 93 | | Simplified |
| Inside db (°F) | 70 | 75 | Construction quality | Average |
| Design TD (°F) | 31 | 18 | Fireplaces | 0 |
| Daily range | - | M | | |
| Inside humidity (%) | 30 | 50 | | |
| Moisture difference (gr/lb) | 5 | 75 | | |

HEATING EQUIPMENT

Make Goodman Mfg.
Trade GOODMAN,
Model GSZ130181A*
AHRI ref no. 3896069

Efficiency 8 HSPF
Heating input
Heating output 17000 Btuh @ 47°F
Temperature rise 27 °F
Actual air flow 580 cfm
Air flow factor 0.118 cfm/Btuh
Static pressure 0.50 in H2O
Space thermostat

COOLING EQUIPMENT

Make Goodman Mfg.
Trade GOODMAN,
Cond GSZ130181A*
Coil AR*F182416C*
AHRI ref no. 3896069

Efficiency 11.0 EER, 13 SEER
Sensible cooling 12180 Btuh
Latent cooling 5220 Btuh
Total cooling 17400 Btuh
Actual air flow 580 cfm
Air flow factor 0.210 cfm/Btuh
Static pressure 0.50 in H2O
Load sensible heat ratio 0.78

| ROOM NAME | Area (ft²) | Htg load (Btuh) | Clg load (Btuh) | Htg AVF (cfm) | Clg AVF (cfm) |
|-------------------|------------|-----------------|-----------------|---------------|---------------|
| Bed 1 | 133 | 2877 | 1623 | 340 | 341 |
| B1C | 22 | 448 | 128 | 53 | 27 |
| Bath 1 | 55 | 166 | 98 | 20 | 21 |
| Laundry | 55 | 661 | 493 | 78 | 104 |
| AH1 | 22 | 761 | 416 | 90 | 88 |
| Down | 287 | 4913 | 2757 | 580 | 580 |
| Other equip loads | | 0 | 0 | | |
| Equip. @ 0.98 RSM | | | 2693 | | |
| Latent cooling | | | 760 | | |
| TOTALS | 287 | 4913 | 3454 | 580 | 580 |

Calculations approved by ACCA to meet all requirements of Manual J 8th Ed.



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2012-Jun-14 14:41:16

Page 1



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|-----------------------------|-----|-----|----------------------|--------------|
| Outside db (°F) | 39 | 93 | | Simplified |
| Inside db (°F) | 70 | 75 | Construction quality | Average |
| Design TD (°F) | 31 | 18 | Fireplaces | 0 |
| Daily range | - | M | | |
| Inside humidity (%) | 30 | 50 | | |
| Moisture difference (gr/lb) | 5 | 75 | | |

HEATING EQUIPMENT

Make Goodman Mfg.
Trade GOODMAN,
Model GSZ130241B*
AHRI ref no. 4526325

Efficiency 7.7 HSPF

Heating input
Heating output 23000 Btuh @ 47°F
Temperature rise 27 °F
Actual air flow 780 cfm
Air flow factor 0.042 cfm/Btuh
Static pressure 0.50 in H2O
Space thermostat

COOLING EQUIPMENT

Make Goodman Mfg.
Trade GOODMAN,
Cond GSZ130241B*
Coil AR*F182416C*
AHRI ref no. 4526325

Efficiency 11.0 EER, 13 SEER

Sensible cooling 17550 Btuh
Latent cooling 5850 Btuh
Total cooling 23400 Btuh
Actual air flow 780 cfm
Air flow factor 0.052 cfm/Btuh
Static pressure 0.50 in H2O
Load sensible heat ratio 0.76

| ROOM NAME | Area (ft²) | Htg load (Btuh) | Clg load (Btuh) | Htg AVF (cfm) | Clg AVF (cfm) |
|-------------------|-------------|-----------------|-----------------|---------------|---------------|
| Office | 306 | 4599 | 2701 | 195 | 139 |
| Bed 2 | 435 | 5397 | 5024 | 228 | 259 |
| B2C | 25 | 319 | 164 | 13 | 8 |
| Toilet | 18 | 0 | 0 | 0 | 0 |
| Powder | 25 | 49 | 36 | 2 | 2 |
| Bath 2 | 99 | 704 | 585 | 30 | 30 |
| Kitchen / Living | 599 | 7366 | 6628 | 312 | 341 |
| Up | 1506 | 18435 | 15139 | 780 | 780 |
| Other equip loads | | 0 | 0 | | |
| Equip. @ 0.98 RSM | | | 14791 | | |
| Latent cooling | | | 4728 | | |
| TOTALS | 1506 | 18435 | 19519 | 780 | 780 |

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2012-Jun-14 14:41:16

Page 2



Project Summary

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Project Information

For: Rambo Residence
305 S. 27th St, Flagler Beach, FL 32136

Notes: Front Door Faces South

Design Information

Weather: Daytona Beach Intl AP, FL, US

Winter Design Conditions

Outside db 39 °F
Inside db 70 °F
Design TD 31 °F

Summer Design Conditions

Outside db 93 °F
Inside db 75 °F
Design TD 18 °F
Daily range M
Relative humidity 50 %
Moisture difference 75 gr/lb

Heating Summary

Structure 4913 Btuh
Ducts 0 Btuh
Central vent (0 cfm) 0 Btuh
Humidification 0 Btuh
Piping 0 Btuh
Equipment load 4913 Btuh

Sensible Cooling Equipment Load Sizing

Structure 2757 Btuh
Ducts 0 Btuh
Central vent (0 cfm) 0 Btuh
Blower 0 Btuh
Use manufacturer's data n
Rate/swing multiplier 0.98
Equipment sensible load 2693 Btuh

Infiltration

Method Simplified
Construction quality Average
Fireplaces 0

| | Heating | Cooling |
|---------------------------|---------|---------|
| Area (ft ²) | 287 | 287 |
| Volume (ft ³) | 2870 | 2870 |
| Air changes/hour | 0.44 | 0.23 |
| Equiv. AVF (cfm) | 21 | 11 |

Latent Cooling Equipment Load Sizing

Structure 760 Btuh
Ducts 0 Btuh
Central vent (0 cfm) 0 Btuh
Equipment latent load 760 Btuh
Equipment total load 3454 Btuh
Req. total capacity at 0.70 SHR 0.3 ton

Heating Equipment Summary

Make Goodman Mfg.
Trade GOODMAN,
Model GSZ130181A*
AHRI ref no. 3896069
Efficiency 8 HSPF
Heating input
Heating output 17000 Btuh @ 47°F
Temperature rise 27 °F
Actual air flow 580 cfm
Air flow factor 0.118 cfm/Btuh
Static pressure 0.50 in H2O
Space thermostat

Cooling Equipment Summary

Make Goodman Mfg.
Trade GOODMAN,
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Coil AR*F182416C*
AHRI ref no. 3896069
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Sensible cooling 12180 Btuh
Latent cooling 5220 Btuh
Total cooling 17400 Btuh
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2012-Jun-14 14:41:16

Page 1



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Notes: Front Door Faces South

Design Information

Weather: Daytona Beach Intl AP, FL, US

Winter Design Conditions

Outside db 39 °F
Inside db 70 °F
Design TD 31 °F

Summer Design Conditions

Outside db 93 °F
Inside db 75 °F
Design TD 18 °F
Daily range M
Relative humidity 50 %
Moisture difference 75 gr/lb

Heating Summary

Structure 16920 Btuh
Ducts 1515 Btuh
Central vent (0 cfm) 0 Btuh
Humidification 0 Btuh
Piping 0 Btuh
Equipment load 18435 Btuh

Sensible Cooling Equipment Load Sizing

Structure 14060 Btuh
Ducts 1079 Btuh
Central vent (0 cfm) 0 Btuh
Blower 0 Btuh
Use manufacturer's data n
Rate/swing multiplier 0.98
Equipment sensible load 14791 Btuh

Infiltration

Method Simplified
Construction quality Average
Fireplaces 0

| | Heating | Cooling |
|---------------------------|---------|---------|
| Area (ft ²) | 1506 | 1506 |
| Volume (ft ³) | 15063 | 15063 |
| Air changes/hour | 0.51 | 0.27 |
| Equiv. AVF (cfm) | 128 | 67 |

Latent Cooling Equipment Load Sizing

Structure 4010 Btuh
Ducts 718 Btuh
Central vent (0 cfm) 0 Btuh
Equipment latent load 4728 Btuh
Equipment total load 19519 Btuh
Req. total capacity at 0.75 SHR 1.6 ton

Heating Equipment Summary

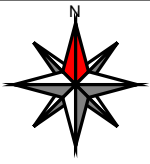
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Heating input 23000 Btuh @ 47°F
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Temperature rise 780 cfm
Actual air flow 0.042 cfm/Btuh
Air flow factor 0.50 in H2O
Static pressure
Space thermostat

Cooling Equipment Summary

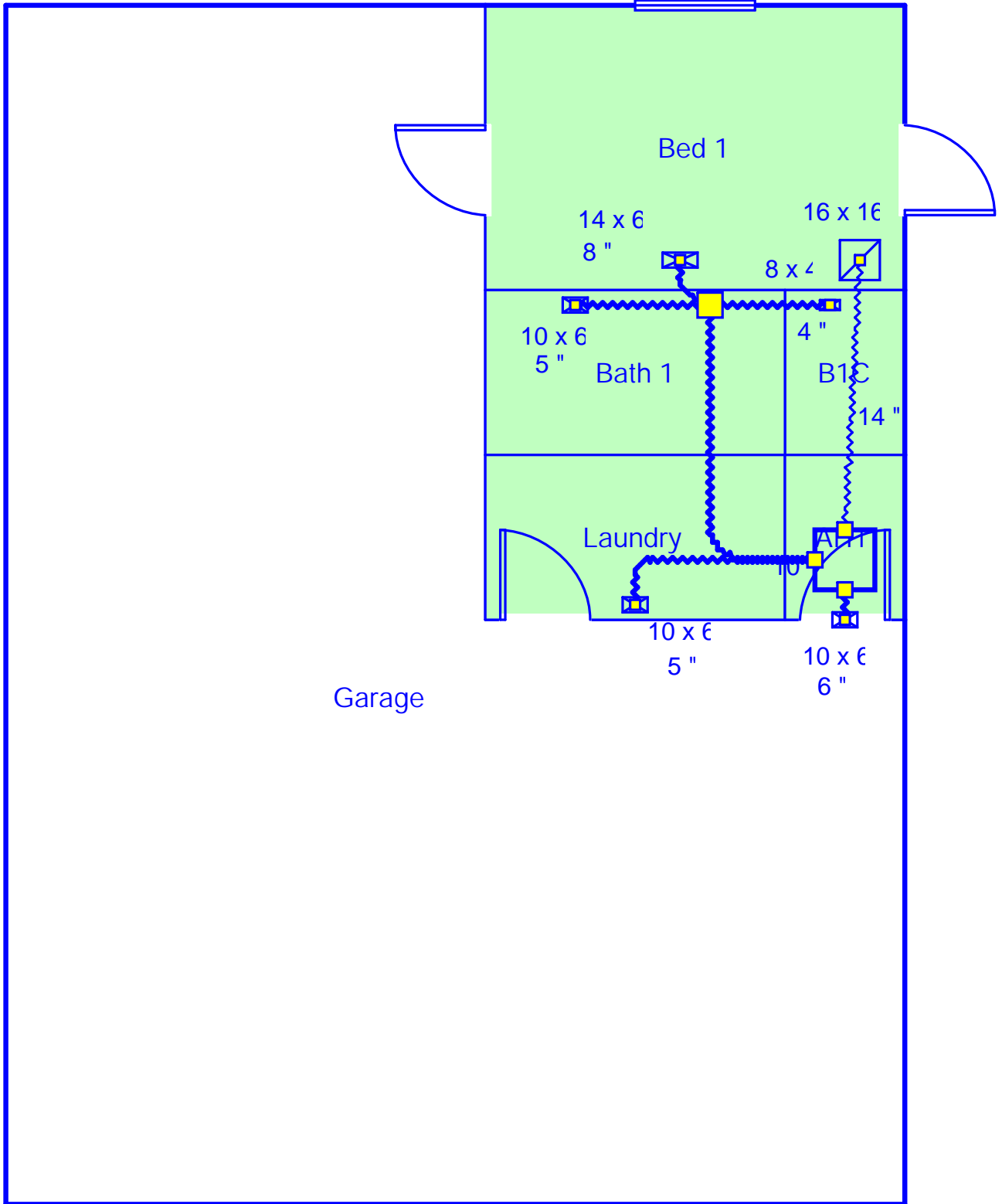
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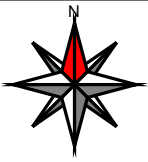
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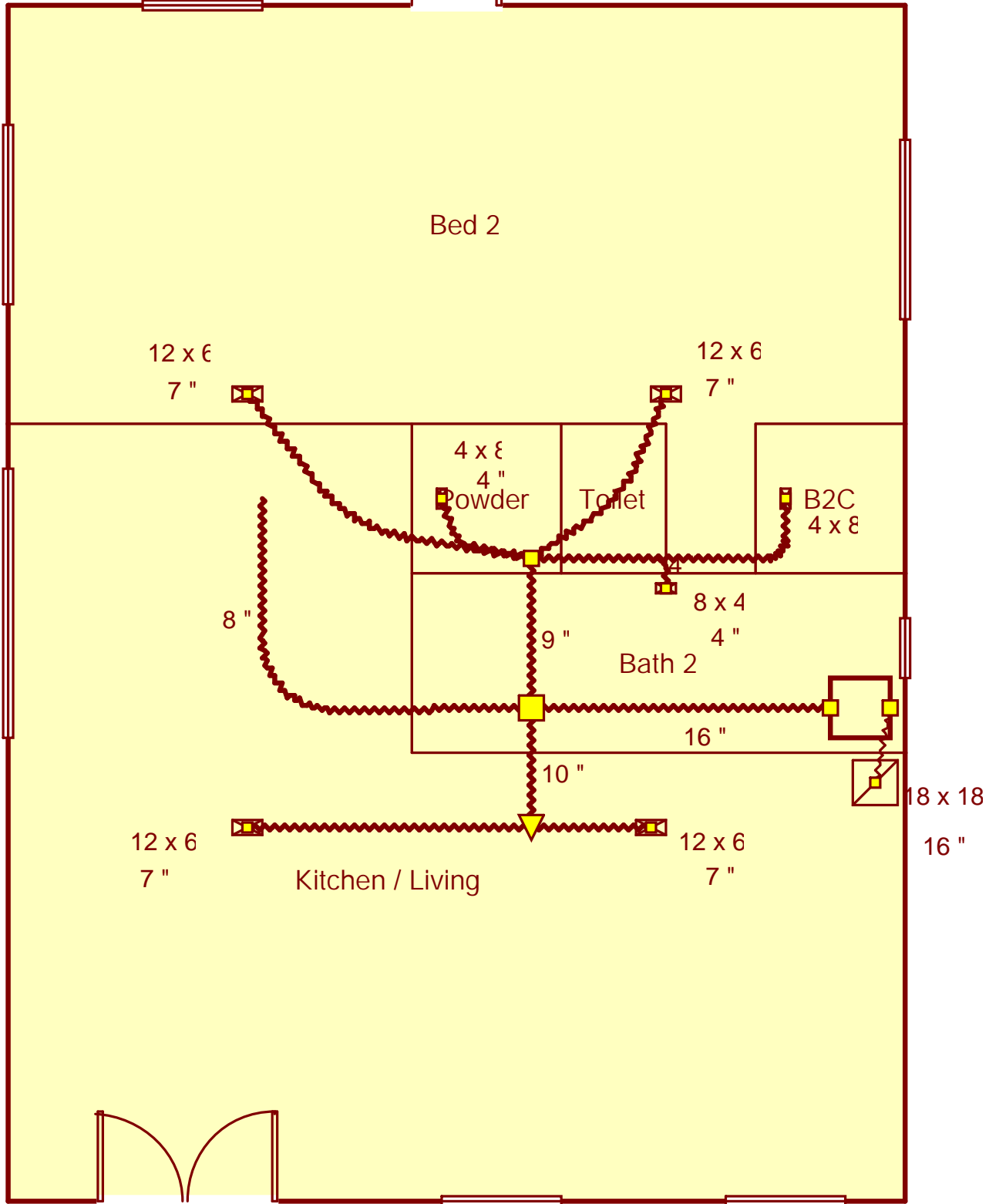
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Scale: 1 : 59
Page 1
RightSuite® Universal 2012
12.0.07 RSU00000
2012-Jun-14 14:41:50
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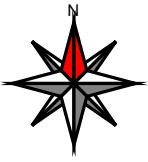
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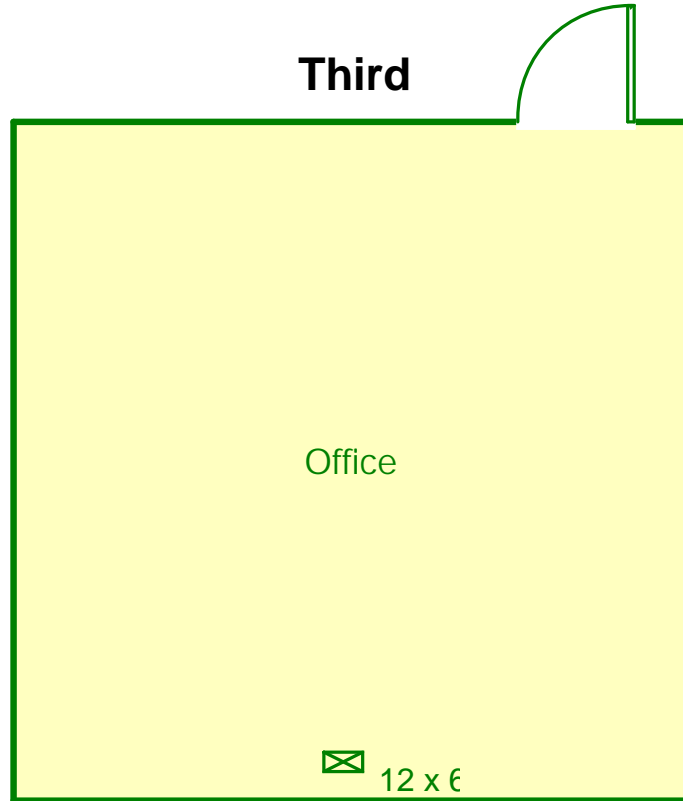
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Scale: 1 : 59
 Page 2
 RightSuite® Universal 2012
 12.0.07 RSU00000
 2012-Jun-14 14:41:50
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Third



Office

12 x 6

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Scale: 1 : 59
Page 3
RightSuite@Universal 2012
12.0.07 RSU00000
2012-Jun-14 14:41:50
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Duct System Summary

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Project Information

For: Rambo Residence
305 S. 27th St, Flagler Beach, FL 32136

| | Heating | Cooling |
|------------------------------------|--------------------|--------------------|
| External static pressure | 0.50 in H2O | 0.50 in H2O |
| Pressure losses | 0.12 in H2O | 0.12 in H2O |
| Available static pressure | 0.38 in H2O | 0.38 in H2O |
| Supply / return available pressure | 0.23 / 0.15 in H2O | 0.23 / 0.15 in H2O |
| Lowest friction rate | 0.213 in/100ft | 0.213 in/100ft |
| Actual air flow | 580 cfm | 580 cfm |
| Total effective length (TEL) | | 178 ft |

Supply Branch Detail Table

| Name | Design (Btuh) | Htg (cfm) | Clg (cfm) | Design FR | Diam (in) | H x W (in) | Duct Matl | Actual Ln (ft) | Ftg.Eqv Ln (ft) | Trunk |
|---------|---------------|-----------|-----------|-----------|-----------|------------|-----------|----------------|-----------------|-------|
| AH1-A | h 761 | 90 | 88 | 0.506 | 6.0 | 0x0 | VIFx | 1.0 | 45.0 | |
| B1C | h 448 | 53 | 27 | 0.220 | 4.0 | 0x0 | VIFx | 16.0 | 90.0 | st2 |
| Bath 1 | c 98 | 20 | 21 | 0.219 | 5.0 | 0x0 | VIFx | 16.5 | 90.0 | st2 |
| Bed 1 | c 1623 | 340 | 341 | 0.213 | 8.0 | 0x0 | VIFx | 14.1 | 95.0 | st2 |
| Laundry | c 493 | 78 | 104 | 0.405 | 5.0 | 0x0 | VIFx | 7.5 | 50.0 | |

Supply Trunk Detail Table

| Name | Trunk Type | Htg (cfm) | Clg (cfm) | Design FR | Veloc (fpm) | Diam (in) | H x W (in) | Duct Material | Trunk |
|------|------------|-----------|-----------|-----------|-------------|-----------|------------|---------------|-------|
| st2 | Peak AVF | 412 | 389 | 0.213 | 756 | 10.0 | 0 x 0 | VinIFx | |

Return Branch Detail Table

| Name | Grill Size (in) | Htg (cfm) | Clg (cfm) | TEL (ft) | Design FR | Veloc (fpm) | Diam (in) | H x W (in) | Stud/Joist Opening (in) | Duct Matl | Trunk |
|------|-----------------|-----------|-----------|----------|-----------|-------------|-----------|------------|-------------------------|-----------|-------|
| rb3 | 0x0 | 580 | 580 | 69.0 | 0.213 | 543 | 14.0 | 0x 0 | | VIFx | |



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Page 1



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| | Heating | Cooling |
|------------------------------------|--------------------|--------------------|
| External static pressure | 0.50 in H2O | 0.50 in H2O |
| Pressure losses | 0.12 in H2O | 0.12 in H2O |
| Available static pressure | 0.38 in H2O | 0.38 in H2O |
| Supply / return available pressure | 0.27 / 0.11 in H2O | 0.27 / 0.11 in H2O |
| Lowest friction rate | 0.173 in/100ft | 0.173 in/100ft |
| Actual air flow | 780 cfm | 780 cfm |
| Total effective length (TEL) | | 219 ft |

Supply Branch Detail Table

| Name | Design (Btuh) | Htg (cfm) | Clg (cfm) | Design FR | Diam (in) | H x W (in) | Duct Matl | Actual Ln (ft) | Ftg.Eqv Ln (ft) | Trunk |
|--------------------|---------------|-----------|-----------|-----------|-----------|------------|-----------|----------------|-----------------|-------|
| B2C | h 319 | 13 | 8 | 0.175 | 4.0 | 0x0 | VIFx | 25.5 | 130.0 | st3 |
| Bath 2 | c 585 | 30 | 30 | 0.180 | 4.0 | 0x0 | VIFx | 20.5 | 130.0 | st3 |
| Bed 2 | c 2512 | 114 | 129 | 0.173 | 7.0 | 0x0 | VIFx | 26.8 | 130.0 | st3 |
| Bed 2-A | c 2512 | 114 | 129 | 0.178 | 7.0 | 0x0 | VIFx | 22.4 | 130.0 | st3 |
| Kitchen / Living | c 3314 | 156 | 171 | 0.211 | 7.0 | 0x0 | VIFx | 23.5 | 105.0 | st4 |
| Kitchen / Living-A | c 3314 | 156 | 171 | 0.221 | 7.0 | 0x0 | VIFx | 18.0 | 105.0 | st4 |
| Office | h 4599 | 195 | 139 | 0.234 | 8.0 | 0x0 | VIFx | 26.1 | 90.0 | st1 |
| Powder | h 49 | 2 | 2 | 0.182 | 4.0 | 0x0 | VIFx | 19.1 | 130.0 | st3 |

Supply Trunk Detail Table

| Name | Trunk Type | Htg (cfm) | Clg (cfm) | Design FR | Veloc (fpm) | Diam (in) | H x W (in) | Duct Material | Trunk |
|------|------------|-----------|-----------|-----------|-------------|-----------|------------|---------------|-------|
| st3 | Peak AVF | 274 | 299 | 0.173 | 678 | 9.0 | 0 x 0 | VinIFlx | st1 |
| st4 | Peak AVF | 312 | 341 | 0.211 | 626 | 10.0 | 0 x 0 | VinIFlx | st1 |
| st1 | Peak AVF | 780 | 780 | 0.173 | 559 | 16.0 | 0 x 0 | VinIFlx | |

Return Branch Detail Table

| Name | Grill Size (in) | Htg (cfm) | Clg (cfm) | TEL (ft) | Design FR | Veloc (fpm) | Diam (in) | H x W (in) | Stud/Joist Opening (in) | Duct Matl | Trunk |
|------|-----------------|-----------|-----------|----------|-----------|-------------|-----------|------------|-------------------------|-----------|-------|
| rb1 | 0x0 | 780 | 780 | 62.5 | 0.173 | 559 | 16.0 | 0x 0 | | VIFx | |



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2012-Jun-14 14:41:16

Page 2