

CROSSWINDS APARTMENTS HVAC CALCULATIONS

ONE BEDROOM UNIT 1A:
 Project Crosswinds Apartments Unit 1A - One Bedroom HVAC Calculations
 Thu Dec 3 11:07:09 EST 2009

Buh Gain for 26.66 Sqft of Double Pane Glass = 2932.6
 Buh Gain for 21.09 Sqft of Windows in Doors = 278.388

Buh Gain for 261.5 Sqft of Wood R-13 & 5/8" Gypsum Wall Number 1 = 600.3
 Buh Gain for 274.5 Sqft of Wood R-13 & 5/8" Gypsum Wall Number 2 = 631.35
 Buh Gain for 301.5 Sqft of Wood R-13 & 5/8" Gypsum Wall Number 3 = 693.45
 Buh Gain for 301.5 Sqft of Wood R-13 & 5/8" Gypsum Wall Number 4 = 693.45

Buh Gain for 921.5 Sqft of Ceiling and Roof Combo R-30; Ceiling Number 1 = 3684
 Buh Gain for 921.5 Sqft of Area Lighting in an Apartment = 2763
 Wattage for 1 Coffee Machine = 470

Total Outside Fresh Air CFM = 180
 This is in accordance with International Mechanical Code 2006

Total BTU/h Gain = 13894.538
 Total Tons of HVAC needed = 1.658 or 2 Tons

ONE BEDROOM UNIT 1A-HC:

Project Crosswinds Apartments Unit 1A-HC - One Bedroom Handicap HVAC Calculations
 Thu Dec 3 11:11:00:14 EST 2009

Buh Gain for 26.66 Sqft of Double Pane Glass = 2932.6
 Buh Gain for 21.09 Sqft of Windows in Doors = 278.388

Buh Gain for 261.5 Sqft of Wood R-13 & 5/8" Gypsum Wall Number 1 = 600.3
 Buh Gain for 274.5 Sqft of Wood R-13 & 5/8" Gypsum Wall Number 2 = 631.35
 Buh Gain for 301.5 Sqft of Wood R-13 & 5/8" Gypsum Wall Number 3 = 693.45
 Buh Gain for 301.5 Sqft of Wood R-13 & 5/8" Gypsum Wall Number 4 = 693.45

Buh Gain for 921.5 Sqft of Ceiling and Roof Combo R-30; Ceiling Number 1 = 3684
 Buh Gain for 921.5 Sqft of Area Lighting in an Apartment = 2763
 Wattage for 1 Coffee Machine = 470

Total Outside Fresh Air CFM = 180
 This is in accordance with International Mechanical Code 2006

Total BTU/h Gain = 13894.538
 Total Tons of HVAC needed = 1.658 or 2 Tons

ONE BEDROOM UNIT 1B:

Project Crosswinds Apartments Unit 1B - One Bedroom HVAC Calculations
 Thu Dec 3 11:20:11:4 EST 2009

Buh Gain for 89.9 Sqft of Double Pane Glass = 9889

Buh Gain for 274.5 Sqft of Wood R-13 & 5/8" Gypsum Wall Number 1 = 631.35
 Buh Gain for 301.5 Sqft of Wood R-13 & 5/8" Gypsum Wall Number 2 = 693.45
 Buh Gain for 292.5 Sqft of Wood R-13 & 5/8" Gypsum Wall Number 3 = 672.75
 Buh Gain for 292.5 Sqft of Wood R-13 & 5/8" Gypsum Wall Number 4 = 672.75

Buh Gain for 968 Sqft of Ceiling and Roof Combo R-30; Ceiling Number 1 = 3872
 Buh Gain for 2 People = 20
 Wattage for 1 Coffee Machine = 470

Total Outside Fresh Air CFM = 180
 This is in accordance with International Mechanical Code 2006

Total BTU/h Gain = 20953.3
 Total Tons of HVAC needed = 1.746 or 2 Tons

APARTMENTS HEAT PUMP SCHEDULE

NO.	BTU	CFM	O.A.	HEAT ELEC.	ELECTRICAL		COMMENTS
					MCA	CKT BRKR	
1	24,000	800	172	5 KW	208V, 1Ø	-	ZONE 4(HURSTARS)
2	36,000	1200	235	7 1/2 KW	208V, 1Ø	-	ZONE 5(HURSTARS)
3	4,000	1500	416	15 KW	208V, 1Ø	EP-1.3	ZONE 6(RITCHEN)
4	60,000	2000	669	120 KW *	208V, 1Ø	-	ZONE 3(EKCRSIZED)
5	5,100	2000	117	120 KW *	208V, 1Ø	EP-2.4	ZONE 1(LUASING)

NOTES:
 .. 20 KW HEAT UNIT COMPOSED OF 2 EA. 10 KW HEATERS ELEMENTS.
 * CONTRACTOR SHALL ASSESS & INSTALL CORRECT SIZE ELECTRICAL EQUIPMENT
 AND WIRING TO MEET REQUIREMENTS OF EQUIPMENT PURCHASER.

HVAC NOTES

- CONCEALED DUCTWORK TO BE UL-181, CLASS 1, FIRE-RATED DUCTBOARD. DUCTS SHALL BE SIZED TO LIMIT MAIN DUCTS TO 1000 CFM & SECONDARY DUCTS TO 800 CFM TO BE INSTALLED PER SMACNA STANDARDS.
- EXPOSED DUCTWORK TO BE GALVANIZED SHEET METAL PER SMACNA STANDARDS. LINE WITH NEOPRENE COATED 1.0", 1.5 POUNDS PER CUBIC FOOT DUCT INSULATION.
- DUCT FLEXIBLE DUCT TO BE UL-181, CLASS 1, AIR DUCT MATERIALS.
- IN ALL SYSTEMS OVER 2000 CFM AND LESS THAN 15,000 CFM, SMOKE DETECTORS SHALL BE INSTALLED IN ACCORDANCE WITH NFPA 72E IN THE RETURN DUCT DOWNSTREAM OF THE FAN HANDLING UNIT AND ALL FILTERS TO AUTOMATICALLY STOP THE FAN.
- ROOF DUCTS SHALL BE INSTALLED WITH A MINIMUM OF EACH SYSTEM UNDER 2000 CFM TO SHUT DOWN THE FAN TO THE EXTENT OF EACH SYSTEM.
- PROVIDE UL RATED FIRE DAMPERS WHERE REQUIRED AT ALL DUCT PENETRATIONS OF FIRE-RATED ASSEMBLIES AND WHERE REQUIRED BY CODE, INCLUDING OUTSIDE AIR INTAKES, CONDENSATE DRAINS TO BE PVC PIPE RUN TO PLUMBERS P-TRAP WITHIN FIVE FEET OF AIR HANDLING UNITS.
- ALL AIR HANDLING SYSTEMS TO BE BALANCED TO ASSURE PROPER AIR FLOWS PER PLANS.
- ALL THERMOSTATS TO BE AUTOMATIC CHANGEOVER WITH HEAT SWITCH.

CROSSWINDS APARTMENTS HVAC CALCULATIONS

TWO BEDROOM UNIT 2A:
 Project Crosswinds Apartments Unit 2A - Two Bedroom HVAC Calculations
 Thu Dec 3 12:34:34 EST 2009

Buh Gain for 56.634 Sqft of Double Pane Glass = 6229.74
 Buh Gain for 21.09 Sqft of Windows in Doors = 278.388

Buh Gain for 382.5 Sqft of Wood R-13 & 5/8" Gypsum Wall Number 1 = 879.75
 Buh Gain for 382.5 Sqft of Wood R-13 & 5/8" Gypsum Wall Number 2 = 879.75
 Buh Gain for 301.5 Sqft of Wood R-13 & 5/8" Gypsum Wall Number 3 = 693.45
 Buh Gain for 292.5 Sqft of Wood R-13 & 5/8" Gypsum Wall Number 4 = 672.75

Buh Gain for 1324 Sqft of Ceiling and Roof Combo R-30; Ceiling Number 1 = 5296
 Buh Gain for 3 People = 30
 Wattage for 1 Coffee Machine = 470

Total Outside Fresh Air CFM = 245
 This is in accordance with International Mechanical Code 2006

Total BTU/h Gain = 20539.828
 Total Tons of HVAC needed = 2.312 or 2 1/2 Tons

TWO BEDROOM UNIT 2A-HC:

Project Crosswinds Apartments Unit 2A-HC - Two Bedroom Handicap HVAC Calculations
 Thu Dec 3 12:34:34 EST 2009

Buh Gain for 56.634 Sqft of Double Pane Glass = 6229.74
 Buh Gain for 21.09 Sqft of Windows in Doors = 278.388

Buh Gain for 382.5 Sqft of Wood R-13 & 5/8" Gypsum Wall Number 1 = 879.75
 Buh Gain for 382.5 Sqft of Wood R-13 & 5/8" Gypsum Wall Number 2 = 879.75
 Buh Gain for 301.5 Sqft of Wood R-13 & 5/8" Gypsum Wall Number 3 = 693.45
 Buh Gain for 292.5 Sqft of Wood R-13 & 5/8" Gypsum Wall Number 4 = 672.75

Buh Gain for 1324 Sqft of Ceiling and Roof Combo R-30; Ceiling Number 1 = 5296
 Buh Gain for 3 People = 30
 Wattage for 1 Coffee Machine = 470

Total Outside Fresh Air CFM = 245
 This is in accordance with International Mechanical Code 2006

Total BTU/h Gain = 20539.828
 Total Tons of HVAC needed = 2.312 or 2 1/2 Tons

APARTMENTS FRESH AIR REQUIREMENTS PER IMC 2006, TABLE 403.3

APARTMENT / ROOM SIZE NUMBER / DESC.	SQUARE FEET	OCCUPANTS	CFM O.A. / OCC.	TOTAL REQ. O.A. (cfm)
1 BEDROOM UNIT 1A	745	2	15	30
LIVING AREAS	107		100	100
KITCHEN	69		50cfm / W.C.	50
BATHROOM	92.1	2		180
OVERALL				
2 BEDROOM UNIT 1A-HC	737	2	15	30
LIVING AREAS	107		100	100
KITCHEN	77		50cfm / W.C.	50
BATHROOM	92.1	2		180
OVERALL				
1 BEDROOM UNIT 1B	745	2	15	30
LIVING AREAS	115		100	100
KITCHEN	108		50cfm / W.C.	50
BATHROOM	108	2		180
OVERALL	968	2		245
2 BEDROOM UNIT 2A	1,033	3	15	45
LIVING AREAS	99		100	100
KITCHEN	192		50cfm / W.C.	245
BATHROOMS (2)	1,324	3		45
OVERALL				
2 BEDROOM UNIT 2A-HC	1,037	3	15	45
LIVING AREAS	99		100	100
KITCHEN	188		50cfm / W.C.	245
BATHROOMS (2)	1,324	3		260
OVERALL				
3 BEDROOM UNIT 3A	1,231	4	15	60
LIVING AREAS	110		100	100
KITCHEN	141		50cfm / W.C.	100
BATHROOMS (2)	1,482	4		260
OVERALL				
3 BEDROOM UNIT 3A-HC	1,223	4	15	60
LIVING AREAS	149		100	100
KITCHEN	149		50cfm / W.C.	100
BATHROOMS (2)	1,482	4		260
OVERALL				

CROSSWINDS APARTMENTS HVAC CALCULATIONS

THREE BEDROOM UNIT 3A:
 Project Crosswinds Apartments Unit 3A - Three Bedroom HVAC Calculations
 Thu Dec 3 12:56:33 EST 2009

Buh Gain for 69.96 Sqft of Double Pane Glass = 7695.6
 Buh Gain for 21.09 Sqft of Windows in Doors = 278.388

Buh Gain for 468 Sqft of Wood R-13 & 5/8" Gypsum Wall Number 1 = 1076.4
 Buh Gain for 468 Sqft of Wood R-13 & 5/8" Gypsum Wall Number 2 = 1076.4
 Buh Gain for 301.5 Sqft of Wood R-13 & 5/8" Gypsum Wall Number 3 = 715.875
 Buh Gain for 311.25 Sqft of Wood R-13 & 5/8" Gypsum Wall Number 4 = 715.875

Buh Gain for 1482 Sqft of Ceiling and Roof Combo R-30; Ceiling Number 1 = 5928
 Buh Gain for 4 People = 40
 Wattage for 1 Coffee Machine = 470

Total Outside Fresh Air CFM = 260
 This is in accordance with International Mechanical Code 2006

Total BTU/h Gain = 23590.538
 Total Tons of HVAC needed = 2.966 or 3 Tons

THREE BEDROOM UNIT 3A-HC:

Project Crosswinds Apartments Unit 3A-HC - Three Bedroom Handicap HVAC Calculations
 Thu Dec 3 12:56:33 EST 2009

Buh Gain for 69.96 Sqft of Double Pane Glass = 7695.6
 Buh Gain for 21.09 Sqft of Windows in Doors = 278.388

Buh Gain for 468 Sqft of Wood R-13 & 5/8" Gypsum Wall Number 1 = 1076.4
 Buh Gain for 468 Sqft of Wood R-13 & 5/8" Gypsum Wall Number 2 = 1076.4
 Buh Gain for 301.5 Sqft of Wood R-13 & 5/8" Gypsum Wall Number 3 = 715.875
 Buh Gain for 311.25 Sqft of Wood R-13 & 5/8" Gypsum Wall Number 4 = 715.875

Buh Gain for 1482 Sqft of Ceiling and Roof Combo R-30; Ceiling Number 1 = 5928
 Buh Gain for 4 People = 40
 Wattage for 1 Coffee Machine = 470

Total Outside Fresh Air CFM = 260
 This is in accordance with International Mechanical Code 2006

Total BTU/h Gain = 23590.538
 Total Tons of HVAC needed = 2.966 or 3 Tons

LEASING BLDG./CLUBHOUSE FRESH AIR REQUIREMENTS PER IMC 2006, TABLE 403.3

ROOM/AREA DESCRIPTION	SQUARE FEET	OCCUPANTS	CFM O.A. / OCC.	TOTAL REQ. O.A. (cfm)
1 BDR. APARTMENT - ZONE 4	647	2	15	30
LIVING AREAS	131		100	100
KITCHEN	65		50cfm / W.C.	50
BATHROOM	89	3		2.3
HALLWAY	89		0.06 cfm / sq ft	5.3
STAR CORRIDOR	97.1	2		185
OVERALL				245
2 BDR. APARTMENT - ZONE 5	1,179	3	15	45
LIVING AREAS	147		100	100
KITCHEN	151		50cfm / W.C.	100
BATHROOMS (2)	1,477	3		245
OVERALL				420
KITCHEN/RECREATION - ZONE 2	630	13	10	130
RECREATION AREA	159		100	100
KITCHEN	171		0.06 cfm / sq ft	10
HALLWAY	70		5	25
MAINTENANCE	99		25	25
MEDIA ROOM	78		75cfm / W.C.	75
WOMENS RESTROOM	1,285	15		420
OVERALL				229
EXERCISE/YENDING - ZONE 3	1,076	22	10	220
EXERCISE ROOM	67		0.06 cfm / sq ft	4
HALLWAY	1,222	22		229
VENDING/GRISER	79		5	5
OVERALL				119
LEASING OFFICE - ZONE 1	168	1	5	5
MANAGERS OFFICE	181	1	5	5
ASSISTANT MANAGER	207	6		30
RECEPTION AREA	41.3	13		65
LEASE AREA	110	1		5
COPY/FILE ROOM	70		0.06 cfm / sq ft	4.2
HALLWAY	79		0.06 cfm / sq ft	4.7
STAR CORRIDOR	1,228	22		119
OVERALL				

CROSSWINDS APARTMENTS HVAC CALCULATIONS

LEASING BLDG./CLUBHOUSE-FIRST FLOOR - ZONE 1 (Lease Office):
 Project Crosswinds Apartments Lease Office/Club House-Zone 1 HVAC Calculations
 Thu Dec 3 15:31:23 EST 2009

Buh Gain for 28.43 Sqft of North Double Pane Glass = 852.9
 Buh Gain for 26.3 Sqft of East and West Double Pane Glass = 8893
 Buh Gain for 26.3 Sqft of South Double Pane Glass = 2104
 Buh Gain for 66.15 Sqft of Windows in Doors = 873.18

Buh Gain for 324 Sqft of Wood R-13 & 5/8" Gypsum Wall Number 1 = 745.2
 Buh Gain for 342 Sqft of Wood R-13 & 5/8" Gypsum Wall Number 2 = 726.6
 Buh Gain for 342 Sqft of Wood R-13 & 5/8" Gypsum Wall Number 3 = 726.6
 Buh Gain for 252 Sqft of Wood R-13 & 5/8" Gypsum Wall Number 4 = 579.6

Buh Gain for 1228 Sqft of Ceiling and Roof Combo R-30; Ceiling Number 1 = 4912
 Buh Gain for 22 People = 220
 Buh Gain for 1228 Sqft of Area Lighting in an Office = 3684

Total Outside Fresh Air CFM = 119
 This is in accordance with International Mechanical Code 2006

Total BTU/h Gain = 18427.08
 Total Tons of HVAC needed = 4.596 or 5 Tons

LEASING BLDG./CLUBHOUSE-FIRST FLOOR - ZONE 2 (Recreation):

Project Crosswinds Apartments Lease Office/Club House-Zone 2 HVAC Calculations
 Thu Dec 3 15:47:54 EST 2009

Buh Gain for 28.43 Sqft of North Double Pane Glass = 852.9
 Buh Gain for 39.45 Sqft of South Double Pane Glass = 3156
 Buh Gain for 18.9 Sqft of Windows in Doors = 249.48

Buh Gain for 448.5 Sqft of Wood R-13 & 5/8" Gypsum Wall Number 1 = 1031.55
 Buh Gain for 260.25 Sqft of Wood R-13 & 5/8" Gypsum Wall Number 2 = 595.575
 Buh Gain for 463.75 Sqft of Wood R-13 & 5/8" Gypsum Wall Number 3 = 1112.625
 Buh Gain for 216 Sqft of Wood R-13 & 5/8" Gypsum Wall Number 4 = 456.8

Buh Gain for 1285 Sqft of Ceiling and Roof Combo R-30; Ceiling Number 1 = 5140
 Buh Gain for 15 People = 150
 Buh Gain for 1285 Sqft of Area Lighting in a Recreational Facility = 3655

Total Outside Fresh Air CFM = 420
 This is in accordance with International Mechanical Code 2006

Total BTU/h Gain = 16852.93
 Total Tons of HVAC needed = 3.386 or 4 Tons

LEASING BLDG./CLUBHOUSE-FIRST FLOOR - ZONE 3 (Exercise Room):

Project Crosswinds Apartments Lease Office/Club House-Zone 3 HVAC Calculations
 Thu Dec 3 16:01:00 EST 2009

Buh Gain for 79.08 Sqft of North Double Pane Glass = 2372.4
 Buh Gain for 105.44 Sqft of East and West Double Pane Glass = 11598.4
 Buh Gain for 28.35 Sqft of Windows in Doors = 374.22

Buh Gain for 343.5 Sqft of Wood R-13 & 5/8" Gypsum Wall Number 1 = 790.05
 Buh Gain for 288 Sqft of Wood R-13 & 5/8" Gypsum Wall Number 2 = 662.4
 Buh Gain for 343.5 Sqft of Wood R-13 & 5/8" Gypsum Wall Number 3 = 790.05
 Buh Gain for 288 Sqft of Wood R-13 & 5/8" Gypsum Wall Number 4 = 662.4

Buh Gain for 1222 Sqft of Ceiling and Roof Combo R-30; Ceiling Number 1 = 4856
 Buh Gain for 22 People = 220
 Buh Gain for 1222 Sqft of Area Lighting in an Exercise Facility = 3666

Total Outside Fresh Air CFM = 229
 This is in accordance with International Mechanical Code 2006

Total BTU/h Gain = 26023.92
 Total Tons of HVAC needed = 4.569 or 5 Tons

LEASING BLDG./CLUBHOUSE-SECOND FLOOR - ZONE 4 (1 Bdr. Apartment):

Project Crosswinds Apartments Lease Office/Club House-Zone 4 HVAC Calculations
 Thu Dec 3 16:12:27 EST 2009

Buh Gain for 41.58 Sqft of East and West Double Pane Glass = 4573.8
 Buh Gain for 39.45 Sqft of South Double Pane Glass = 3156
 Buh Gain for 9.49 Sqft of Windows in Doors = 124.74

Buh Gain for 337.5 Sqft of Wood R-13 & 5/8" Gypsum Wall Number 1 = 776.25
 Buh Gain for 204.5 Sqft of Wood R-13 & 5/8" Gypsum Wall Number 2 = 469.25
 Buh Gain for 247.5 Sqft of Wood R-13 & 5/8" Gypsum Wall Number 3 = 569.25
 Buh Gain for 337.5 Sqft of Wood R-13 & 5/8" Gypsum Wall Number 4 = 776.25

Buh Gain for 971.5 Sqft of Ceiling and Roof Combo R-30; Ceiling Number 1 = 3884
 Buh Gain for 2 People = 20
 Wattage for 1 Coffee Machine = 470

Total Outside Fresh Air CFM = 188
 This is in accordance with International Mechanical Code 2006

Total BTU/h Gain = 18860.49
 Total Tons of HVAC needed = 1.572 or 2 Tons

LEASING BLDG./CLUBHOUSE-SECOND FLOOR - ZONE 5 (2 Bdr. Apartment):

Project Crosswinds Apartments Lease Office/Club House-Zone 5 HVAC Calculations
 Thu Dec 3 16:18:25 EST 2009

Buh Gain for 67.7 Sqft of North Double Pane Glass = 261
 Buh Gain for 39.45 Sqft of South Double Pane Glass = 3156
 Buh Gain for 9.49 Sqft of Windows in Doors = 124.74

Buh Gain for 480 Sqft of Wood R-13 & 5/8" Gypsum Wall Number 1 = 1104
 Buh Gain for 337.5 Sqft of Wood R-13 & 5/8" Gypsum Wall Number 2 = 776.25
 Buh Gain for 523.5 Sqft of Wood R-13 & 5/8" Gypsum Wall Number 3 = 1204.05
 Buh Gain for 211.5 Sqft of Wood R-13 & 5/8" Gypsum Wall Number 4 = 486.45

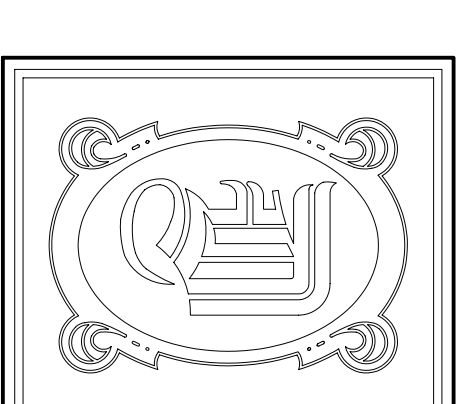
Buh Gain for 1477 Sqft of Ceiling and Roof Combo R-30; Ceiling Number 1 = 5988
 Buh Gain for 3 People = 30
 Wattage for 1 Coffee Machine = 470

Total Outside Fresh Air CFM = 245
 This is in accordance with International Mechanical Code 2006

Total BTU/h Gain = 19079.49
 Total Tons of HVAC needed = 2.589 or 3 Tons

EXHAUST FAN SCHEDULE

LOC	CFM	VOLTAGE	TYPE	MANUFACTURER
TOILETS	100	120	VENTILIGHT	BROAN, NUTONE, OR FANSCOINC



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NEW APARTMENT COMPLEX

CROSSWINDS APARTMENTS HAMMOND, LA

MECHANICAL CALCULATIONS, SCHEDULES, & NOTES

REV: SCALE: AS NOTED
 JOB#: 08112.13
 DATE: 12-16-09
 SHEET

M-1

OF