



Quantity	Item Number	Description	Manufacturer	Model	BTU	Elec.	Vent_Make-up	Water	NOTE
1	655	AIR RETURN GRILL	TITUS	355	0				WALL MOUNTED
2	656	EXHAUST GRILL	TITUS	--	0				CEILING MOUNTED
10	670	SUPPLY DIFFUSER	TITUS	TMS-AA	0				

### PACKAGE ROOF TOP UNIT DESIGN CRITERIA

HVAC COOLING AND HEATING LOAD BREAKDOWNS		Project: Blue Bird Cafe		Location: Iowa City, Iowa	
Indoor db Heating	65.0	Latitude	41.0N	IDR	High
Indoor db Cooling	65.0	99% db	-11.0	HTD	75.0
Indoor RH Cooling	55.0%	1% db	92.0	CTD	37.0
Elevation	661.0	Grains	109.5	ACF	1.0

  

SA	Window & Glass Doors	Construction Number	Direction & Details	Net Area	Heating Load	Cooling Load	
A	Win-5 (Window north)			76.0	10,069.9	4,408.0	
B	Win-10 (Door North)			60.0	3,096.2	1,218.0	
C	Win-5 (Window east)			150.0	19,750.5	21,660.0	
D	Win-5 (Storefront east)			180.0	23,700.6	26,880.0	
E	Win-5 (Storefront east)			350.0	47,401.2	20,880.0	
F	Win-10 (Door East)			30.0	1,548.1	609.0	
G	Win-10 (Door South)			60.0	3,096.2	1,218.0	
SB	Skylights	A	S-7 (Skylight)	0.0	0.0	0.0	
8	Wood & Metal Doors	A					
9	Above Grade Walls	A	Wall-14 (South wall)	656.0	4,836.0	1,508.1	
		B	Wall-14 (East wall)	1,088.0	8,020.7	3,598.8	
		C	Wall-14 (North wall)	640.0	4,718.1	1,471.3	
		F	Wall-4 (Wall)	0.0	0.0	0.0	
9	Partition Walls	A					
9	Below Grade Walls	A					
10	Ceilings	D	Ceil-31 (Ceiling)	2,788.0	6,760.4	2,854.9	
10	Partition Ceilings	A					
11A	Floors	E	Floor-33 (Slab on grade)	90.0	2,428.2	0.0	
12	Infiltration	A	Envelope Leakage	Loose Infil Airflow for Heating	464.8	38,084.6	6,992.3
		B	No of Fireplaces	D	Infil Airflow for Cooling	240.4	
13	Gross exposed wall area for WAR: 3,300.0						
13	Internal Gains	A	Number of bedrooms	D	# Occupants >	80	8,000.0
	One occupant = 100.0 sensible load	B	Appliance Gains			2,400.0	
14	Sub Totals				173,467.8	104,304.4	
15	Duct Loss / Gain		Factors >	5.0	14,276.7	7,291.2	
16	Ventilation		Airflow for this job >	1,367.6	112,065.3	39,812.7	
19	Blower Heat Gain		Manufacturer's performance data has blower heat		1,707.0		
20	Total Sensible Loss or Gain (sum lines 14 through 20)				299,809.8	153,115.2	

  

A	Latent Infiltration Gain	0.659
B <th>Latent for Occupants (One occupant = 20.0)</th> <th>1,600.0</th>	Latent for Occupants (One occupant = 20.0)	1,600.0
C <th>Latent Ventilation Gain</th> <th>53,873.6</th>	Latent Ventilation Gain	53,873.6
D <th>Total Latent Gains (Btuh)</th> <th>64,943.5</th>	Total Latent Gains (Btuh)	64,943.5
E <th>Total Cooling and Heating Loads (Btuh)</th> <th>299,809.8</th>	Total Cooling and Heating Loads (Btuh)	299,809.8
		218,058.8

- Unitary Gas/Electric Rooftop Units  
Provide the following for each unit:
1. DX cooling, gas heat
  2. Standard efficiency
  3. Convertible configuration
  4. 208-230/60/3
  5. Micro-processor controls 3 ph
  6. High gas heat capacity
  7. Economizer, reference enthalpy 0-100%, with barometric relief\* 3 ph
  8. Through the base electric 3 ph
  9. Non-fused disconnect 3 ph
  10. Froststat 3 ph
  11. Return air smoke detector 3 ph
  12. Roof curb (Fid)
  13. Programmable sensor w/ night setback
  14. 1st Year labor warranty

### Roof Top Unit Schedule

- RTU #1 ZONE 1  
HEAT: 100,000 BTU  
NATURAL GAS FURNACE  
COOL: 7.5 TON, 14 SEER  
CONDENSOR
- RTU #2 ZONE 2 (RTU #2)  
HEAT: 125,000 BTU  
NATURAL GAS FURNACE  
COOL: 7.5 TON, 14 SEER  
CONDENSOR
- RTU #3 ZONE 3 (RTU #3)  
HEAT: 75,000 BTU  
NATURAL GAS FURNACE 3.5  
COOL: 3.5 TON, 14 SEER  
CONDENSOR

### TYPE-1 EXHAUST HOOD #1

Quantity	Number	Description	BTU GAS
1	006	UTILITY TABLE W/ BACKSPLASH	0
1	055	FREEZER WORK TOP	0
1	099	REFRIGERATOR WORK TOP - 96"	0
1	102	BROILER, SALAMANDER, 36", GAS	66,000
2	117	GRIDDLE, COUNTER UNIT, GAS-FIRED	60,000
1	119	10 BURNER RANGE W/ 2 OVEN	358,000
			544,000

Type 1 Exhaust Hood #1:  
14'-0" x 4'-0"  
5,750 CFM Minimum Required

### TYPE-1 EXHAUST HOOD #2

Quantity	Number	Description	BTU GAS
1	055	FREEZER WORK TOP	0
1	104	FRYER - GAS	120,000
1	122	DOUBLE SECTION OVEN - ELECTRIC	0
1	155	BROILER, CHAR-TYPE, GAS-FIRED, MODULAR	80,000
1	157	SMOKER	0
			200,000

Type 1 Exhaust Hood #2:  
10'-0" x 4'-0"  
5,750 CFM Minimum Required

### Type 1 Exhaust Hoods:

UL listed, hood assembly for commercial cooking appliances and be in compliance with NFPA Bulletin No. 96 Ventilator and shall be high velocity, low volume, cartridge type and have a nominal 95% grease extraction efficiency

Grease Container constructed of 18-gauge stainless steel having a maximum capacity of one gallon. Fabricate container so as to be easily removable for daily cleaning. Removal of container exposes 1-1/2" ID stainless steel tube to allow capture of cleaning solution when hood and duct system are cleaned.

Furnish UL listed, NSF listed, vapor proof incandescent Light Fixtures installed on 4' centers. Fixtures to be completely inter-wired to a junction box and left ready for final connection to power source. Field connections and light switch by applicable trades.  
Furnish Rod Hanger Brackets at front and center to suspend canopy from ceiling. Furnish angle frame members at rear for fastening to wall.

### TYPE-2 condensate EXHAUST HOOD #3

FEATURES:  
Wall and Ceiling Mounting Provision facilitates installation.  
2" Exhaust Collar.  
1/2" Gutter along bottom perimeter with 3/8" Drain at rear.  
CONSTRUCTION:  
Flanged Sides and sealed - water tight.  
MATERIAL:  
Heavy Duty Gauge Stainless Steel Type "304".

### Requirements Specific To: HVAC System:

- 1. Specified equipment consists of field-assembled components - efficiency documentation provided
  - 2. Discharge dampers prohibited with fan motors >10 hp
  - 3. Integrated air economizer required
- Generic Requirements: Must be met by all systems to which the requirement is applicable:
- 4. Minimum one humidity control device per installed humidification/dehumidification system
  - 5. Automatic Controls: Setback to 55 degrees F (heat) and 85 degrees F (cool); 7-day clock, 2-hour occupant override, 10-hour backup  
Exception: Continuously operating zones  
Exception: 2 kW demand or less, submit calculations
  - 6. Outside-air source for ventilation; system capable of reducing OSA to required minimum
  - 7. R-5 supply and return air duct insulation in unconditioned spaces R-8 supply and return air duct insulation outside the building R-8 insulation between ducts and the building exterior when ducts are part of a building assembly  
Exception: Ducts located within equipment  
Exception: Ducts with interior and exterior temperature difference not exceeding 15 degrees F.  
Exception: Continuously welded and locking-type longitudinal joints and seams on ducts operating at static pressures less than 2 inches w.g. pressure classification
  - 8. Mechanical fasteners and sealants used to connect ducts and air distribution equipment
  - 9. Ducts sealed - longitudinal seams on rigid ducts; transverse seams on all ducts; UL 181A or 181B tapes and mastics
  - 10. Hot water pipe insulation: 1 in. for pipes <=1.5 in. and 2 in. for pipes >1.5 in. Chilled water/refrigerant/brine pipe insulation: 1 in. for pipes <=1.5 in. and 1.5 in. for pipes >1.5 in. Steam pipe insulation: 1.5 in. for pipes <=1.5 in. and 3 in. for pipes >1.5 in.  
Exception: Piping within HVAC equipment.  
Exception: Fluid temperatures between 55 and 105 degrees F.  
Exception: Fluid not heated or cooled.  
Exception: Runouts <4 ft in length.
  - 11. Operation and maintenance manual provided to building owner
  - 12. Balancing devices provided in accordance with IMC (2006) 603.17

### GENERAL MECHANICAL FIELD QUALITY CONTROL

1. DO NOT ENCLOSE, COVER, OR P.U.T PIPING INTO OPERATION UNTIL IT IS INSPECTED AND APPROVED BY AUTHORITIES HAVING JURISDICTION.
2. DURING INSTALLATION NOTIFY AUTHORITIES HAVING JURISDICTION AT LEAST 24 HOURS BEFORE INSPECTION MUST BE MADE.
3. ROUGH-IN INSPECTION: ARRANGE FOR INSPECTION OF PIPING BEFORE CONCEALING OR CLOSING-IN AFTER ROUGH-IN AND BEFORE SETTING FIXTURES.
4. FINAL INSPECTION: ARRANGE FOR FINAL INSPECTION BY AUTHORITIES HAVING JURISDICTION TO OBSERVE TESTS SPECIFIED BELOW AND TO ENSURE COMPLIANCE WITH REQUIREMENTS.
5. REINSPECTION IF AUTHORITIES HAVING JURISDICTION FIND THAT THE INSTALLED WORK WILL NOT PASS TEST OR INSPECTION, MAKE REQUIRED CORRECTIONS AND ARRANGE FOR REINSPECTION.
6. REPORTS: PREPARE INSPECTION REPORTS AND HAVE THEM SIGNED BY AUTHORITIES HAVING JURISDICTION.
7. TEST FOR LEAKS AND DEFECTS IN NEW PIPING AND PARTS OF EXISTING PIPING THAT HAVE BEEN ALTERED, EXTENDED, OR REPAIRED. IF TESTING IS PERFORMED IN SEGMENTS, SUBMIT SEPARATE REPORT FOR EACH TEST, COMPLETE WITH DIAGRAM OF PORTION OF PIPING TESTED.
8. LEAVE UNCOVERED AND UNCONCEALED NEW, ALTERED, EXTENDED, OR REPLACED DOMESTIC WATER PIPING UNTIL IT HAS BEEN TESTED AND APPROVED. EXPOSE WORK THAT WAS COVERED OR CONCEALED BEFORE IT WAS TESTED.
9. CAP AND SUBJECT PIPING TO STATIC WATER PRESSURE OF 50 P.S.G. (345 KPA) ABOVE OPERATING PRESSURE, WITHOUT EXCEEDING PRESSURE RATING OF PIPING SYSTEM MATERIALS.
10. ISOLATE TEST SOURCE AND ALLOW TO STAND FOR FOUR HOURS. LEAKS AND LOSS IN TEST PRESSURE CONSTITUTE DEFECTS THAT MUST BE REPAIRED.
11. REPAIR LEAKS AND DEFECTS WITH NEW MATERIALS AND RETEST PIPING UNTIL SATISFACTORY RESULTS ARE OBTAINED.

Architect:



ITEMS SHOWN ARE DIAGRAMMATIC AND ARE SHOWN FOR THE LIMITED PURPOSE OF INDICATING PROPOSED LOCATIONS OF THE DESIGN. CONTRACTORS SHALL PROVIDE WORK IN ACCORDANCE WITH ALL APPLICABLE CODES AND REGULATIONS REQUIRED BY THE AUTHORITY HAVING JURISDICTION. CONTRACTOR SHALL COORDINATE THE INSTALLATION OF NEW SYSTEMS WITH EXISTING SYSTEMS.

Thomas Mc Inerney Architect reserves the right to determine a fair and equitable solution to any problems, mistakes, oversights or hidden damage. Please do not hesitate to phone our office at 319-331-0365, especially immediately upon discovery a conflict with the Scope of Work.

Please do not instinctively produce a solution or proceed with work that would result in a change order requiring reimbursement by the owner.

Any solutions outside this policy shall be with prior approval and will be at the franchisee's or contractor's expense.

Project:

Blue Bird Cafe  
West Cherry Street & HWY 965  
North Liberty, Iowa

Project number: 11.27

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Issue date:

Date	Description
2011.10.31	PERMIT REVIEW
2011.11.11	Owner Review

Sheet Title:

MECHANICAL PLAN

Sheet Number:

M-101