

**SEQUENCE OF OPERATION**

OCCUPIED HOURS ARE FROM 7AM TO 10PM (ADJUSTABLE).  
ALL TEMPERATURES LISTED SHALL BE ADJUSTABLE.

ALL AC UNITS SHALL BE SET TO 80F (COOLING) AND 55F (HEATING) IN UNOCCUPIED MODE.

**AC-1**

1. THERMOSTAT SHALL INDEX UNIT TO COOLING (65F) OR HEATING MODE (60F) AS DICTATED BY SPACE TEMPERATURE.
2. AIR CIRCULATION, WHEN THE UNIT CONTROL IS IN THE OCCUPIED MODE THE FAN SHALL OPERATE CONTINUOUSLY TO PROVIDE VENTILATION AIR. FAN SHALL CYCLE IN UNOCCUPIED MODE.
3. OUTSIDE AIR DAMPERS SHALL BE OPEN IN OCCUPIED MODE AND CLOSED IN UNOCCUPIED MODE.

**AC-2, AC-3, AC-4, AC-5**

1. THERMOSTAT SHALL INDEX UNIT TO COOLING (74F) OR HEATING MODE (69F) AS DICTATED BY SPACE TEMPERATURE.
2. AIR CIRCULATION, WHEN THE UNIT CONTROL IS IN THE OCCUPIED MODE THE FAN SHALL OPERATE CONTINUOUSLY TO PROVIDE VENTILATION AIR.
3. OUTSIDE AIR DAMPERS SHALL BE OPEN IN OCCUPIED MODE AND CLOSED IN UNOCCUPIED MODE.

**KITCHEN HOOD SYSTEMS**

1. THE KITCHEN HOOD EXHAUST FAN SHALL START THROUGH A HOOD MOUNTED SWITCH. WHEN THE HOOD FAN IS INDEXED FOR OPERATION, THE MAKEUP AIR UNIT SHALL START.
2. THE MAKEUP AIR UNITS SHALL CYCLE GAS HEATING AND DX COOLING AS REQUIRED TO MAINTAIN DISCHARGE AIR TEMPERATURE BASED ON OUTSIDE AIR TEMPERATURE AS FOLLOWS:
  - A. OUTSIDE AIR ABOVE 70F, UNIT INTRODUCES 73F AIR.
  - B. OUTSIDE AIR ABOVE 50F AND BELOW 70F, UNIT INTRODUCES UNCONDITIONED OUTSIDE AIR.
  - C. OUTSIDE AIR BELOW 50F, UNIT FURNACE CYCLES TO MAINTAIN 50F DISCHARGE AIR TEMPERATURE.
  - D. CHANGEOVER TEMPERATURES AND DISCHARGE AIR TEMPS SHALL BE ADJUSTABLE.

**EF-1 & EF-2**

1. INTERLOCK WITH LIGHT SWITCH.

**EF-3**

1. RUN CONTINUOUSLY.

**EF-4 & EF-5**

1. START/STOP IN RESPONSE TO LINE VOLTAGE THERMOSTAT (80F).
2. INTERLOCK ASSOCIATED MAKEUP AIR DAMPER ACTUATOR WITH FAN.

**ELECTRIC WALL HEATER SCHEDULE**

Unit Tag	Area Served	CFM	ESP	Fan Motor	HP	Phase	Model	Remarks
EH-1	SEE PLANS	175	1350	277	1		GH23TDD-EP	1-5

1. MODEL NUMBERS BASED ON MARKET. EQUALS BY SINGLE CHROMALOX.
2. DISCONNECT BY MFG.
3. UNIT MOUNTED IN STAIR.
4. SUPFACE MOUNTED.
5. HEAVY DUTY TO GA. LAMINATED STEEL GRILLE.

**PACKAGED GAS-FIRED AC UNIT SCHEDULE**

Unit Tag	Area Served	CFM	ESP	Fan Motor	HP	Phase	Model	Remarks
AC-1	SEE PLANS	88	2724	230	0.80	3.6	469	3 67 0634405 7641 65.79 70 150 120 1 2.8 2 52.034.0 7.84.7 21 25 460 3 YHR10E1 10M301 1, 3, 4, 5, 9, 10, 11, 12, 13
AC-2	SEE PLANS	3	1270	315	0.61	1.3	460	3 89.67 25.7 36.27 70 130 96 1 0.6 1 37.6 6 9.2 15 460 3 YSC026 9M301 1-6, 9, 11
AC-3	SEE PLANS	16	3330	470	0.80	3.6	460	3 78.785.0 104.27 84.25 70 200 160 1 1.5 2 66.0376.0 8.2.5.8 21.9 30 460 3 YHR10E1 9M301 1-6, 9, 11
AC-4	SEE PLANS	7.5	2040	460	0.60	2.0	460	3 80.87 36.97 66.31 70 200 160 1 2.5 2 50.39 7.6-3.4 20.3 25 460 3 YSC026 9M301 1-6, 9, 11
AC-5	SEE PLANS	27.5	9645	2600	1.00	7.5	460	3 79.24.64 311.26 245.06 70 600 480 3 3.5 3 98.9142142 14.13.6.16.4 72.1 80 460 3 YHR10E1 9M301 1-6, 9, 11

1. MODEL NUMBERS BASED ON TRADE. EQUALS BY CARRIER.
2. GRADE MOUNTED, HORIZONTAL DUCT CONNECTIONS.
3. WALL MOUNTED PROGRAMMABLE TSTAT BY UNIT MFG.
4. GAS REGULATOR FOR 2 PSI GAS SERVICE.
5. DISCONNECT BY E.U.
6. SINGLE POINT ELECTRICAL CONNECTION.
7. MODEL NUMBERS BASED ON CAPITVAIRE. EQUALS BY GREENHECK, CARNIS, COOK.
8. REFER TO KITCHEN EQUIPMENT DRAWINGS.
9. ABOVE LISTED IS NET TOTAL, NOT GROSS. SUBMITTALS SHALL CLEARLY SHOW CAPACITIES AT SCHEDULED ENTERING AIR TEMPERATURES.
10. AC-1 SHALL MAINTAIN 40 DEGREES INDOOR DESIGN HUMIDITY, 48% RELATIVE HUMIDITY IN OCCUPIED SPACE.
11. EOT GAS HEAT.
12. AC-1 SHALL INCLUDE CO2 ENERGY RECOVERY WHEEL (WHEEL SIZE ~ NAC424) BETWEEN UNIT AND CURB. UNIT SHALL BE IN CONDUIT ARRANGEMENT WITH CURB TO ADAPT TO EXH AND HORIZONTAL DUCT ARRANGEMENT. ERY SHALL BE POWERED FROM AC-1. ERY IS IN CONDUIT WITH SCHEDULED PERFORMANCE.
13. DRAIN PAN FLOOR SWITCH COMPLYING WITH 2012 NCCMECH CODE SECTION 907.2.1.

**FAN SCHEDULE**

Unit Tag	Area Served	CFM	ESP	Fan Motor	HP	Phase	Type	Model	Details	Remarks
EF-1	SEE PLANS	210	25	553	3.6	DIRECT	CEILING MOUNTED	SP-A350	734301	
EF-2	SEE PLANS	210	25	553	3.6	DIRECT	CEILING MOUNTED	SP-A350	734301	1-5
EF-3	SEE PLANS	75	25	768	1.0	DIRECT	CEILING MOUNTED	SP-H10	9391	1-5
EF-4	SEE PLANS	2,500	75	1009	10.0	DIRECT	CENT. INLINE	SO-160-VG	1211	1, 2, 9-12
EF-5	SEE PLANS	2,500	75	1009	10.0	DIRECT	CENT. INLINE	SO-160-VG	1211	1, 2, 9-12

1. MODEL NUMBERS BASED ON GREENHECK. EQUALS BY CARNIS, COOK.
2. NEMA 3B DISCONNECT BY MFG.
3. BACKDRIFT DAMPER.
4. MAKEUP ENAMEL WALL CAP BY FAN MFG.
5. UNIT MOUNTED SOLID STATE SPEED CONTROL.
6. MODEL NUMBERS BASED ON CAPITVAIRE. EQUALS BY GREENHECK, CARNIS, COOK.
7. REFER TO KITCHEN EQUIPMENT DRAWINGS (M01) SERIES. M.C. SHALL BE RESPONSIBLE FOR PROVIDING AND INSTALLING FAN, DUCT, AND UL LISTED FIRE BLANKET.
8. INLET GRADE TSTAT.
9. LINE VOLTAGE TSTAT.
10. 2" INSULATED DUCT.
11. INTERLOCK MOUNTED IN DUCT WITH FAN, COORDINATE OPERATOR VOLTAGE.
12. TORQUERIZED DAMPER.

**GRILLE & DIFFUSER SCHEDULE**

Unit Tag	Area Served	CFM	ESP	Fan Motor	HP	Phase	Type	Model	Details	Remarks
A-1	SEE PLANS	150	120	1	2.8	2	52.034.0	7.84.7	21 25 460 3	YHR10E1 10M301 1, 3, 4, 5, 9, 10, 11, 12, 13
B-1	SEE PLANS	150	120	1	2.8	2	52.034.0	7.84.7	21 25 460 3	YHR10E1 10M301 1, 3, 4, 5, 9, 10, 11, 12, 13
C-1	SEE PLANS	150	120	1	2.8	2	52.034.0	7.84.7	21 25 460 3	YHR10E1 10M301 1, 3, 4, 5, 9, 10, 11, 12, 13

1. PAPER IS METAL GRILLE, HTLX, KRUEGER, TITILE & BAILEY, NAH-OR, CARNIS. SCHEDULE IS GENERAL, SOME MAY NOT BE USED. PAINT ALL INSIDE VISIBLE SURFACES FLAT BLACK.
3. SYMBOL EXPLANATION: XXXCFM - SYMBOL, FRAME (RMK 5), NECK (RMK 5.7) CFM
5. FRAME TYPES: T - T-RAR
- 8 - FRESH SUPP. INTL. E - EXH. EXTRACTOR W/ BUILT IN PLASTIC FLANGE FOR BROP SLIDE (TYPE "A" DIFFUSER) CEILING MOUNTING. D - DROPPED FRAME. NOTE: VERIFY FRAME CEILING COMPATIBILITY.
4. OVERALL SIZE: LAY-IN - 2X2, OTHER GRILLES - NECK - 2'x5'. 5. OVERALL FACE SUPPLY NECK SIZE:
 

NO.	ROUND	CFM	NO.	SQUARE	CFM
	NECK SIZE		NECK SIZE		
A	6"	100	H	606	125
B	8"	175	I	909	280
C	10"	275	J	1342	300
D	12"	400	K	1814	500
E	14"	525	L	2418	7125
F	16"	700	M	3182	1550
G	18"	885	N	4124	2000

 NOTE: VERIFY CFM / NECK SIZE.  
 6. ADJUSTABLE HORIZONTAL VERTICAL  
 7. "A" & "E" EXH RETURN NECK SIZES (L" x "S" x "H" ONLY)  
 NO. ROUND CFM NO. SQUARE CFM  
 NECK SIZE NECK SIZE
10. NECK SIZE INDICATES NON-DUCTED LAY-IN PANEL.
9. ORO IF USED AS EXHAUST.
11. VOU USE EXTRACTOR W/ BUILT IN SEWON ON PLANS.
12. PAINT TO MATCH WALL.
13. VERTICAL FRONT BRACES.
14. IF LAY-IN CEILING EXACT GRILLE SIZE BY MFG. OMIT SCREW HOLES.
15. VERTICAL FRONT BRACES.
16. FINISH SCHEDULE FOR PAINTING.
17. HINGED FILTER GRILLE W/2" CLIPS.
18. FILTERS FARR 30-36, U3, CLASS II, 2" THICK, PLEATED.
19. (1), 20X20 FILTER.
20. (1), 30X30 & (1), 20X20 FILTER.
21. LINEAR DIFFUSER GRILLES LENGTH, MAX. OVERALL LENGTH/ACTUAL LENGTH 22. 1.125" BORDER.
23. 1/2" GAUGE FRAME, 14 GAUGE BLADES, 3/8" DEGREE HORIZ. BLADE ANGLE. SUPPORT BARS 6" O.C. (MAX).

**AIR BALANCE CHART**

Unit Tag	Supply (CFM)	Returns (CFM)	Outside Air (CFM)	Relief (CFM)
AC-1	2724	230	-	-
AC-2	1270	315	-	-
AC-3	3330	470	-	-
AC-4	2040	460	-	-
AC-5	9645	2600	-	-
F-1	-	-	1680	-
F-2	-	-	1512	-
F-3	-	-	2100	-
F-5	-	-	1800	-
F-6	-	-	4860	-
F-7	-	-	7680	-
F-8	-	-	6912	-
F-9	-	-	7680	-
F-10	-	-	6912	-
EH-1	-	-	210	-
EF-2	-	-	210	-
EF-3	-	-	75	-
Totals	19299	19294	24892	24403

(Building Pressurization (CFM) 489)

- NOTES:**
- ◆ EQUIPMENT BY TRADES OTHER THAN MECHANICAL IS SHOWN DASHED.
  - ◆ CONDUIT AND WIRING BY HVAC, PLUMBING CONTRACTOR, OR OTHER TRADES.
  - ◆ IF AN ADDITIONAL DISCONNECT IS REQUIRED BY NEC, IT SHALL BE PROVIDED AND INSTALLED BY THE EQUIPMENT CONTRACTOR.
  - ◆ A COMBINATION STARTER OR VFD MAY BE USED IN LIEU OF A SEPARATE DISCONNECT SWITCH AND STARTER LOCATED ADJACENT TO EQUIPMENT.
  - ◆ FEEDER CIRCUIT WIRING AND CONDUIT IN ELECTRICAL WORK. SEE PANELBOARD SCHEDULES FOR WIRE AND BREAKER.
  - ◆ JUNCTION BOX TO BE SHOWN ON ELECTRICAL PLANS FOR SOME EQUIPMENT. IF A STARTER OR DISCONNECT IS SUPPLIED, A JUNCTION BOX SHALL BE INSTALLED ADJACENT TO EQUIPMENT. THE ELECTRICAL CONTRACTOR SHALL PROVIDE LINE WIRING TO THE JUNCTION BOX. LOAD SIDE WIRING WILL BE PROVIDED BY MECHANICAL CONTRACTOR OR OTHER TRADES.
  - ◆ PROVIDE UTILIZING AN MCC, THE STARTER, CB, OR VFD IN THE MCC ARE PROVIDED BY THE ELECTRICAL CONTRACTOR.
  - ◆ IN ALL CASES THE EQUIPMENT CONTRACTOR SHALL MAKE FINAL CONNECTIONS, START UP, AND TEST EQUIPMENT.
  - ◆ IF THE ROOF TOP EQUIPMENT IS NOT PROVIDED WITH BUILT IN SWITCH, THE ELECTRICAL CONTRACTOR SHALL PROVIDE A DISCONNECT SWITCH.

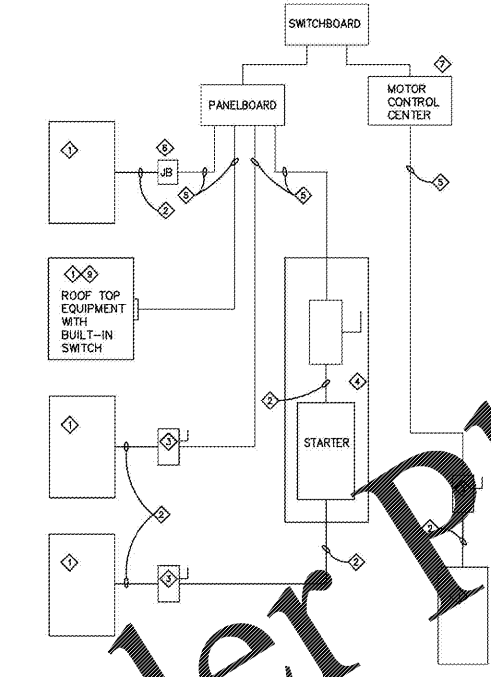
**MECHANICAL SYSTEMS, SERVICE SYSTEMS AND EQUIPMENT METHOD OF COMPLIANCE**

- Prescriptive
- Energy Cost Budget
- Thermal Zone 4A
- Exterior Design Conditions:
  - Winter Dry Bulb: 18
  - Summer Dry Bulb: 84
- Interior Design Conditions:
  - Winter Dry Bulb: 70
  - Summer Dry Bulb: 75
  - Relative Humidity: 50%
- Building Heating Load: 697 MBH
- Building Cooling Load: 49 TONS
- Mechanical Space Conditioning System:
  - Unitary:
    - Description of Unit: 5 packaged A/C units with gas heat
    - Heat Output of Unit: 1270 MBH
    - Cooling Output of Unit: 49.5 TONS
- List Equipment Efficiencies:
 

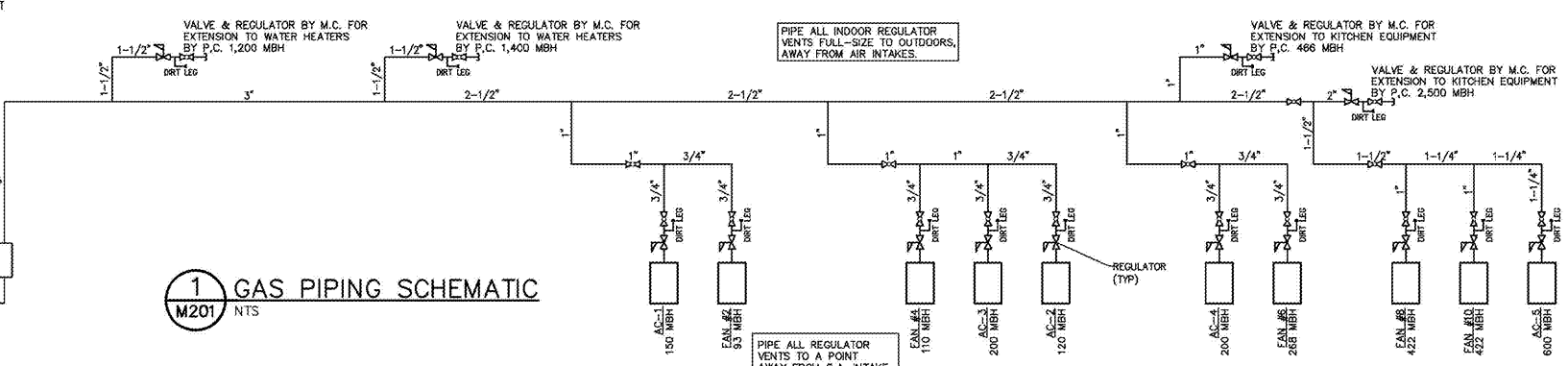
Equipment	Efficiency
Motor	Specs Require Compliance w/ NC Energy Code.
Number of Phases	Specs Require Compliance w/ NC Energy Code.
Minimum Efficiency	Specs Require Compliance w/ NC Energy Code.
Motor Type	Specs Require Compliance w/ NC Energy Code.
Number of Poles	Specs Require Compliance w/ NC Energy Code.
- Designer Statement:
 

To the best of my knowledge and belief, the design of this building complies with the mechanical systems, service systems and equipment requirements of the 2012 NC Energy Code. Compliance with Section 506 shall be by "Higher Efficiency Service Water Heating" (506.2.4).

**2 DETAIL - DIVISION OF WORK**



**1 GAS PIPING SCHEMATIC**



**WILKES COMMUNITY COLLEGE**  
**WILKES COMMUNITY COLLEGE**  
SC0# 220-011A  
NCCO# 220-011A  
**CULINARY LAB**

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**REVISIONS:**

No.	Description	Date

PROJECT: 9202-169779  
DATE: 12/18  
DRAWN BY: CCO  
CHECKED BY: JCC

**SCHEDULES**  
**M-201**