

HEATING-VENTILATING & AIR CONDITIONING

NOTES AND SPECIFICATIONS

- 1- PROVIDE AND INSTALL A COMPLETE AIR CONDITIONING SYSTEM AS SHOWN ON PLANS WITH WORKMANSHIP TO MEET OR EXCEED THE 2004 FBC, 2004 ASHRAE AND LOCAL CODES WHEREVER APPLIES, INCLUDING THE LATEST EDITION OF THE FLORIDA STATE ENERGY CODE REQUIREMENTS SUPERSEDE ALL OF THE FOLLOWING.
- 2- ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE LATEST ISSUE OF NFPA 90A, 90B, 70 SMACNA MANUALS.
- 3- IT IS NOT THE INTENT OF THESE PLANS TO SHOW EVERY DETAIL OF CONSTRUCTION. CONTRACTOR IS EXPECTED TO PROVIDE ALL ITEMS THAT ARE REQUIRED FOR A COMPLETE AND WORKABLE HVAC SYSTEM TO THE EXTENT TO WHICH THE PLANS INDICATE. IT IS THE CONTRACTOR RESPONSIBILITY TO FURNISH ALL NECESSARY LABOR, MATERIALS AND MISCELLANEOUS ITEMS TO PLACE ALL EQUIPMENT IN PROPER WORKING ORDER.
- 4- CONTRACTOR SHALL EXAM THE PLANS AND SPECIFICATIONS OF ALL TRADES FOR PARTS OF WORK. IF ANY DISCREPANCIES EXIST BETWEEN DRAWINGS FOR HIS WORK AND OR WORK OF OTHER TRADES, HE SHALL REPORT SUCH DISCREPANCIES TO THE ENGINEER AND OBTAIN WRITTEN INSTRUCTION FOR ANY CHANGES IN WORK COVERED BY THESE PLANS AND SPECIFICATIONS. NEGLECT OR FAILURE OF CONTRACTOR TO REPORT SUCH DISCREPANCIES TO THE ENGINEER PRIOR TO BIDDING SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.
- 5- CONTRACTOR SHALL PROVIDE ALL FEES, PERMITS AND INSURANCE AND SUBMIT TO THE OWNER AN UNCONDITIONAL WRITTEN GUARANTEE FOR THE REPAIR OR REPLACEMENT OF DEFECTIVE WORKMANSHIP AND MATERIALS PROVIDED UNDER THIS CONTRACT FOR A PERIOD OF ONE YEAR AFTER THE DATE OF ACCEPTANCE BY THE OWNER.
- 6- CONTRACTOR SHALL SUBMIT TO THE OWNER THE FOLLOWING SHOP DRAWINGS AND PRODUCT DATA PRIOR TO ORDERING OR COMMENCING WITH THE WORK:
 - A- DUCT MATERIALS AND ACCESSORIES
 - B- DIFFUSERS, GRILLS AND REGISTERS.
 - C- FIRE DAMPERS.
 - D- ALL EQUIPMENT SUCH AS A.H.U., C.U., FANS, VAV'S, THERMOSTATS ETC.
- 7- THE FIVE YEAR FACTORY WARRANTY OF THE COMPRESSOR MOTORS SHALL BE FILED OUT IN THE NAME OF THE OWNER. THIS CONTRACTOR SHALL ALSO FURNISH TO THE OWNER ALL CERTIFICATES OF FINAL INSPECTIONS AND APPROVAL FROM THE INSPECTION AUTHORITIES HAVING JURISDICTION. THE INSTALLATION ACCEPTANCE FORMAT WHICH ACCOMPANIES THE EQUIPMENT FROM THE FACTORY SHALL BE FILLED OUT AND FURNISHED TO THE OWNER.
- 8- THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING AND INSTALLING THE NECESSARY CONDENSATE DRAIN LINE FROM THE APPARATUS TO THE EXTERIOR OF THE BUILDING. METHODS SHOWN ON PLANS, UTILIZE PVC OR COPPER MATERIAL DEPENDING THE CEILING FIRE RATING OR THE USE OF A RETURN AIR PLENUM. CONSULT LOCAL CODE REQUIREMENTS. CONDENSATE DRAIN PIPING SHALL BE INSULATED WITH FIRE RESISTIVE 3/4" THICK FOAM PLASTIC INSULATION.
- 9- WHERE CALLED FOR ON PLANS OR THE USE OF FIBERGLASS IS APPROVED BY LOCAL CODE REQUIREMENTS, FIBERGLASS DUCT SHALL BE 1 1/2" THICK RIGID FIBROUS GLASS WITH ALUMINUM FOIL GLASS SCRM AND DRAFT OR PLASTIC JACKET VAPOR BARRIER. THE "K" VALUE OF THE DUCT SHALL BE 0.23 BTU/IN/3Q FT. °F/2 IN/HR. MINIMUM RATING AT 75 DEGREES, R-6 MIN.
- 10- FLEXIBLE DUCTWORK, WHERE SHOWN ON THE DRAWINGS SHALL BE EQUAL TO FLEXAIRE WITH WIRE HELIX FRAME, POLYESTER LINER, HIGH DENSITY FIBERGLASS (*) INSULATION AND MET-ALIZED REINFORCED VAPOR BARRIER EXTERIOR COVER. PROVIDE SPIN-IN FITTINGS WITH SCOOP OR BELLMOUTH TYPE FITTINGS WITH ADJUSTABLE DAMPERS FOR ALL BRANCH TAKE-OFFS. (*) ALL DUCTWORK, INSTALLATION AND EQUIPMENT MUST MEET STATE OF FLORIDA ENERGY CODE REQUIREMENTS FOR 1995.
- 11- EXHAUST DUCTS SHALL BE GALVANIZED STEEL LOCK FORMING QUALITY, HAVING ZINC COATING OF 1.25 OUNCES PER SQUARE FOOT FOR EACH SIDE.
- 12- REFRIGERANT LIQUID LINES BELOW 5/8" O.D. SIZE TO BE ACR TYPE L SOFT COPPER LIQUID LINES 5/8" O.D. AND LARGER AND ALL SUCTION LINES SHALL BE ACR TYPE L HARD COPPER, 15% SILFLOS TO BE USED FOR WELDING OF REFRIGERANT PIPING. ALL SUCTION LINES TO BE INSULATED WITH A MINIMUM 1/2" THICK ARMAFLEX OR EQUAL ROUGH-IN AND PRESSURE TEST ALL REFRIGERANT LINES WITH A 75 PSI PRESSURE, PRIOR TO CLOSING OFF THE REFRIGERANT LINES TO HOLD CHARGE FOR A MINIMUM OF 24 HOURS. SIZE OF REFRIGERANT LINES TO BE AS PER MANUFACTURER RECOMMENDATIONS FOR THE ACTUAL LENGTH OF PIPE.
- 13- CONTRACTOR TO VERIFY EXISTING FIELD CONDITIONS BEFORE HIDDING THE PROJECT, FAILURE TO DO WILL RESULT THAT NECESSARY FIELD MODIFICATIONS SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.
- 14- ALL EQUIPMENT SUPPORTS SHOWN ON PLANS ARE DIAGRAMMATIC AND REQUIRE APPROVAL OF ARCHITECTS, STRUCTURAL ENGINEER AND EQUIPMENT MANUFACTURER PRIOR TO HANGING.
- 15- CONTRACTOR TO VERIFY WITH THE ARCHITECT OF RECORD THE CEILING/FLOOR FIRE RATING TO DETERMINE REQUIREMENTS FOR FIRE DAMPERS, BEFORE BEGINNING WORK.
- 16- THERMOSTAT TO BE MANUFACTURED BY HONEYWELL OR EQ THERMOSTAT LOCATION TO BE APPROVED BY ARCHITECT PRIOR TO INSTALLATION.
- 17- A/C CONTRACTOR TO VERIFY WITH ARCHITECT THE UNITS EER RATING REQUIRED BASED ON FLORIDA ENERGY CODE COMPLIANCE.
- 18- AIR BALANCE: THIS CONTRACTOR SHALL PROVIDE AIR RETURN BALANCE AS PER FBC 601.4, A 1" UNDER CUT DOOR MUST BE PROVIDED IN EVERY ROOM THAT NEED RETURN.

UNIT NUMBER	RTU-1	RTU-2	RTU-3	RTU-4	RTU-5	RTU-6
CFM	6,700	7,000	6,200	1,700	1,700	1,900
OA CFM	4,000 Δ	4,000 Δ	1,500 Δ	4,000 Δ	200	400
TOTAL CAPACITY	341,500	341,500	301,100	341,500	58,400	59,200
SENSIBLE CAPACITY	203,400	212,400	160,300	212,400	40,500	43,000
E.S.P. (IN. WATER)	1.2	1.2	1.20	1.20	1	1
E.A.T. (DB/WB)	91/78	91/78	91/78	91/78	91/78	91/78
L.A.T. (DB/WB)	54.2/53.7	54.2/53.7	54.2/53.7	54.2/53.7	54.2/53.7	54.2/53.7
MCA	150.00	150.00	110.00	150.00	50.00	50.00
MOP	180.00	180.00	130.00	180.00	70.00	70.00
VOLTAGE	208-3-60	208-3-60	208-3-60	208-3-60	208-3-60	208-3-60
MOTOR TYPE	HIGHEFF	HIGHEFF	HIGHEFF	HIGHEFF	HIGHEFF	HIGHEFF
HEATER	-	-	-	-	-	-
MANUFACTURER	DUNHAM-BUSH	DUNHAM-BUSH	DUNHAM-BUSH	DUNHAM-BUSH	DUNHAM-BUSH	DUNHAM-BUSH
MODEL	6ACPSB	6ACPSB	6ACPSB	6ACPSB	6ACPSB	6ACPSB
TONAGE (TONS)	30.00	30.00	30.00	30.00	36.0	36.0
CONSTRUCTION	DOUBLE-WALL	DOUBLE-WALL	DOUBLE-WALL	DOUBLE-WALL	DOUBLE-WALL	DOUBLE-WALL
COIL COATINGS	YES	YES	YES	YES	YES	YES
HOT GAS REHEAT	YES	YES	YES	YES	YES	YES
WEIGHT (LB)	4,400	4,400	4,000	4,400	1,100	1,100

ACCESSORIES:

1. PROVIDE STANDARD 14" ROOFCURB.
2. HOT GAS REHEAT TO BE MODULATING TYPE CONTROL ON/OFF IS NOT ACCEPTABLE.
3. CORROSION PROTECTION COATING ON COILS
4. UNITS SHALL BE PROVIDED WITH MOTORIZED O/A DAMPER TO BE CONTROL BY SANCTUARY CONTROLLER BASED ON CO2.
5. Contact MEG for pricing and coordination @ 786-228-8925.
6. Provide units with low ambient fan cycling. Hot Gas Bypass factory mounted.

HVAC DESIGN REQUIREMENTS	YES	NO
DUCT SMOKE DETECTORS	X	-
FIRE DAMPERS	X	-
SMOKE DAMPERS	-	X
FIRE RATED ENCLOSURE CEILING ASSEMBLY	X	-
FIRE STOPPING	X	-
SMOKE CONTROL	-	X

TEST AND BALANCE NOTE:

1. THIS CONTRACTOR SHALL PROVIDE AN INDEPENDENT TEST AND BALANCE WHERE INDICATED ON THIS DRAWING TO ASSURE THE REQUIRED AMOUNT OF TPA ARE PROVIDED AND NOTIFY OF ANY CONFLICT TO REACH THE AMOUNT OF CFM REQUIRED.

INSULATION NOTE:

PROVIDE MINIMUM INSULATION OF R-42 IN EXTERIOR WALLS R-19 IN CEILING.

INTERLOCK CONTROL OF EACH EXHAUST FAN TO LIGHT SWITCHES EACH BATHROOM. TERMINATE W/GOOSENECK & INSERT SCREEN. INSTALL 6" DUCT.

NOTES:

- 1- COORDINATE COLOR FINISH WITH ARCHITECT.
- 2- APPROVED EQUAL MANUFACTURERS ARE ACCEPTABLE.
- 3- ALL GRILLES SHALL BE ALUMINUM CONSTRUCTION.

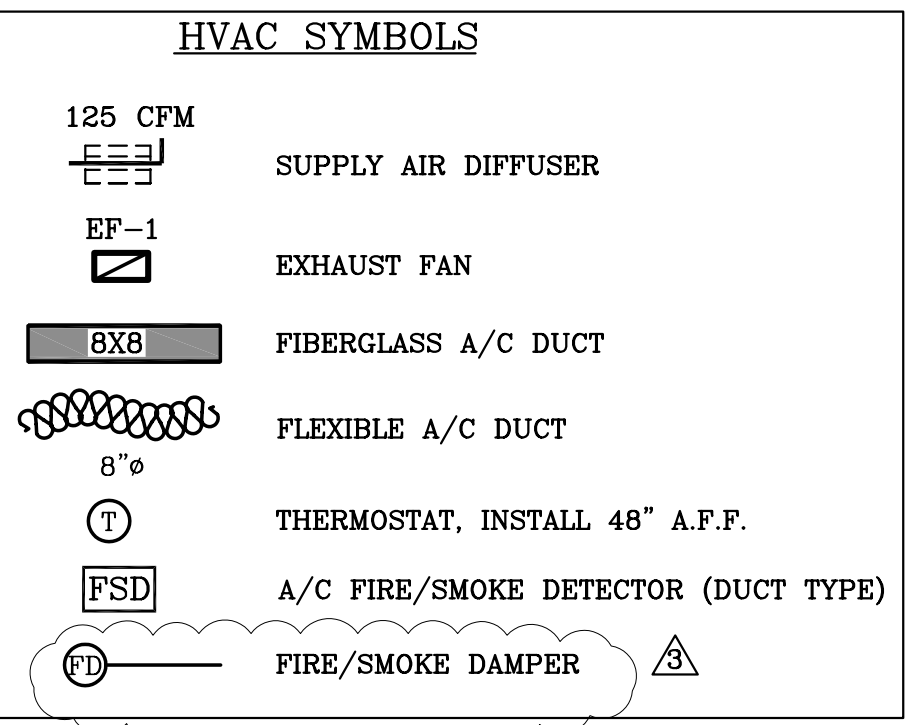
NOTES:

- 1- PROVIDE THERMOSTAT WITH SUB-BASE.
- 2- PROVIDE SOLENOID VALVES, ACCUMULATORS AND OTHER ACCESSORIES RECOMMENDED BY MFG. FOR PROPER OPERATION.
- 3- APPROVED EQUAL MANUFACTURERS ARE ACCEPTABLE.
- 4- PROVIDE ACRYLIC COATING ON ALL PARTS OF AHU'S AND CU'S INCLUDING COILS AND FINS.

THIS CONTRACTOR SHALL PROVIDE AND INSTALL ALL THERMOSTATS FOR ALL UNITS. COORDINATE LOCATION WITH OWNER ARCHITECT

THIS CONTRACTOR SHALL PROVIDE AND INSTALL SMOKE DETECTORS AT ALL UNITS SUPPLY AND RETURN DUCT AND CONNECT TO THE FIRE ALARM SYSTEM.

- GENERAL NOTES**
1. TEMPERATURE SENSORS SHALL BE LOCATED 4'-6" ABOVE FINISHED FLOOR. TEMPERATURE SENSORS SHALL BE TRANE MODEL VASNSRSTAT2 (SENSOR ONLY) OR EQUAL IVORY FINISH.
 2. ALL WORK SHALL BE COORDINATED WITH ALL TRADES INVOLVED. OFFSETS IN PIPING AND DUCTS (INCLUDING DIVIDED DUCTS) AND TRANSITIONS AROUND OBSTRUCTION SHALL BE PROVIDED AT NO ADDITIONAL COST TO THE OWNER.
 3. VERIFY ALL EQUIPMENT CONNECTIONS WITH MANUFACTURERS CERTIFIED DRAWINGS. VERIFY AND PROVIDE DUCT TRANSITIONS TO FURNISHED EQUIPMENT. FIELD VERIFY AND COORDINATE ALL DIMENSIONS BEFORE FABRICATION.
 4. CONCRETE PADS TO SUPPORT MECHANICAL EQUIPMENT SHALL BE SIZED AND LOCATED BY MECHANICAL CONTRACTOR. COORDINATE WITH OTHER TRADE.
 5. FLEXIBLE DUCT CONNECTING MAIN DUCT TO SUPPLY DIFFUSER OR AIR ROOF SHALL NOT EXCEED 8 FEET IN LENGTH. IF THE DISTANCE EXCEEDS THIS LIMIT, AN INSULATED METAL DUCT OF REQUIRED LENGTH AND EQUAL DIAMETER SHALL BE INSTALLED WITH AIR SCOOP AND DAMPER AT MAIN DUCT TO REDUCE FLEXIBLE DUCT TO A MAXIMUM LENGTH OF 8 FEET.
 6. ALL DUCTS TO BE GROUNDED ACROSS FLEXIBLE CONNECTION WITH FLEXIBLE COPPER GROUNDING STRAPS.
 7. PROVIDE FLEXIBLE DUCT CONNECTIONS ON ALL DUCTS CONNECTING TO EXHAUST FANS AND AIR HANDLING UNITS.
 8. THE INSIDE OF ALL DUCTWORK VISIBLE THROUGH A GRILLE OR DIFFUSER SHALL BE PAINTED FLAT BLACK.
 9. ALL DUCT SIZES SHOWN ARE INSIDE CLEAR DIMENSIONS.
 10. CONDENSATE DRAIN LINE FROM AIR HANDLING UNIT SHALL BE PIPED FULL SIZE OF THE UNIT DRAIN OUTLET, WITH "P" TRAP, TO FLOOR DRAIN.
 11. SMOKE DETECTORS SHALL BE FURNISHED AND WIRED UNDER DIVISION 16. MOUNTING OF SMOKE DETECTORS IN DUCTWORK SHALL BE WORK OF DIVISION 15. MOUNT IN SUPPLY DUCT PER SECTION A/M-2.
 12. ALL CONTROL WIRE AND CONDUIT SHALL COMPLY WITH N.E.C. AND DIVISION 16 OF SPECIFICATIONS.
 13. CEILING SPACE IS USED AS A RETURN AIR PLENUM. ALL WIRING, CONDUIT, PIPING, ETC. LOCATED IN THIS AREA SHALL BE PLENUM RATED.
 14. TEST AND BALANCE AGENCY SHALL INCREASE FAN SPEED AS REQUIRED TO BALANCE ZONE DAMPERS AND THEN REDUCE FAN SPEED AS REQUIRED FOR SPECIFIED AHU CFM.



VENTILATION FAN SCHEDULE

FAN No.	SERVICE	CAPACITY		MAX RPM	DRIVE	MOTOR		MANUFACTURER ANAP MODEL	CONTROL	ACCESSORIES
		CFM	SP IN WG			H.P.	ELECTRICAL DATA 1/φ/Hz			
EF-1	BATHROOM	50	0.25	1680	D	46W	120/1/60	NUTONE	LIGHTS	A, C
EF-2	BATHROOM	100	0.250	1680	D	46W	120/1/60	NUTONE	CONT.	A, C
EF-3	STORAGE ROOM & BATHROOM	200	0.375	1000	D	100W	120/1/60	GREENHECK SP-250	CONT.	A, C
EF-4	BATHROOM	300	0.250	1,152	D	135W	120/1/60	GREENHECK SP-A390	CONT.	A, C

ACCESSORIES:

- A BACKDRAFT DAMPER
- B FACTORY PREFAB. CURB W/ EXTENSION
- C DISCONNECT SWITCH
- D BIRDSCREEN
- E MOTORSIDE GUARD
- F SMOKE DETECTOR
- G WALL MOUNT COLLAR
- H MOTOR COVER
- I DISCHARGE SHUTTER
- J HANGING VIB. SPRING ISOLATOR
- K ACCESS DOORS
- L BELT DOOR
- M SPRING ISOLATOR
- N EPOXY COATED HOUSING
- O EMERGENCY

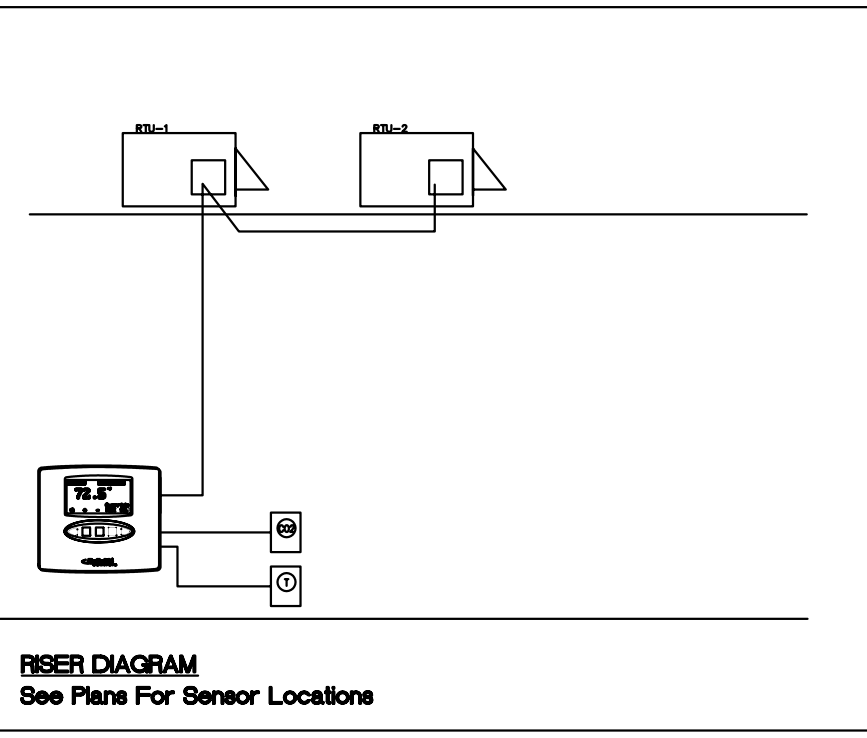
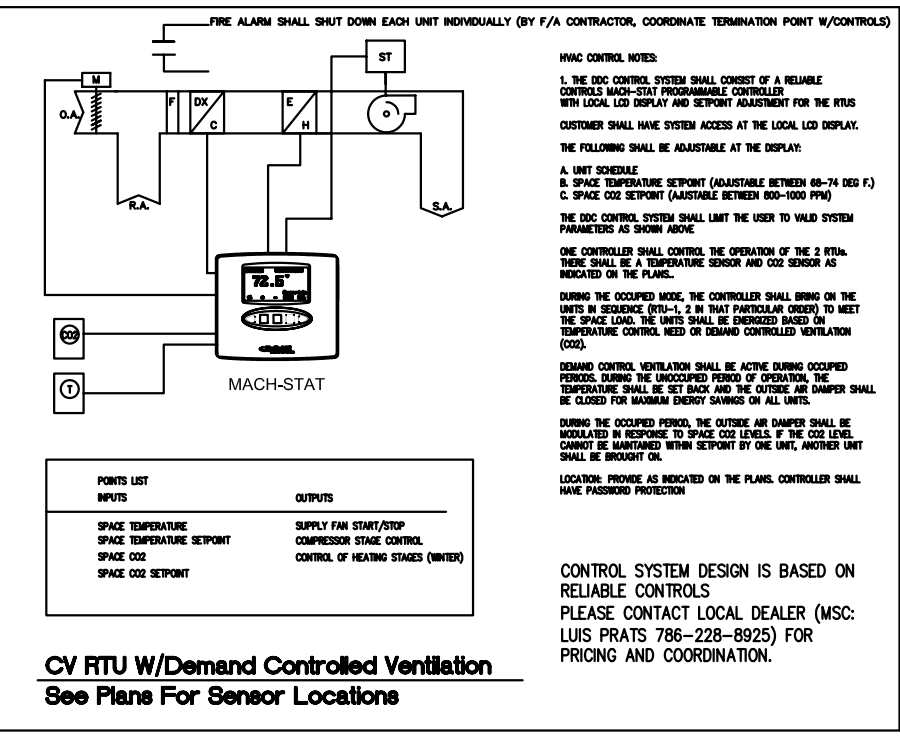
NOTES:

- *DRYER FAN SHALL BE MONITORED BY THE BUILDING FIRE ALARM SYSTEM IN ACCORDANCE WITH THE F.B.C.

OUTDOOR AIR VENTILATION CALCULATIONS
(BASED ON ASHRAE STANDARD 62-2004)

AREA	TOTAL PEOPLE	C.F.M./PERSON	TOTAL CFM
SANCTUARY	800	20	16,000 @ 50%=8,000 (1)(2)
CLASSROOMS	100	15	1,500 (2)
HALL	400	20	8,000 @ 50%=4,000 (1)(2)
KITCHEN AREA	10	20	200 MINIMUM
OFFICE AREA	20	20	400 MINIMUM

- (1) BASE ON INTERMITTENT OCCUPANCY LESS THAN 3 HRS. FOR 50% OF TOTAL CFM IN LOBBY AREA AND 100% IN TELLERS & OFFICE AREA (CODE SECTION 62-1989 PARR. 6.1.3.4).
- (2) NO. OF PEOPLE IS BASED ON ARCHITECT DRAWING.



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