SPLIT SYSTEM AIR HANDLING UNIT SCHEDULE

MARK	AHU-1
LOCATION	MECHANICAL CLOSET
MANUFACTURER	TRANE
MODEL	4TEC3F36
FAN	
TOTAL AIR FLOW (CFM)	1000
OUTSIDE AIR FLOW (CFM)	120
S.P. IN. WG. (TOT./EXT.)	-/0.6
DRIVE/TYPE	DIRECT/CENT.
H.P./SPEED	1/3 / HIGH
VOLTS/ø	230/1
EVAPORATOR COIL	
ENT. AIR TEMP. (DB/WB)	77.4/64.8
LVG. AIR TEMP. (DB/WB)	57.9/55.3
SENS. CAPACITY (MBH)	20.8
TOTAL CAPACITY (MBH)	28.0
FACE AREA (SQ. FT.)	3.67
ROWS/FINS PER INCH	3/14
ELECTRIC HEATING COIL	
INPUT (KW) @ 240 VOLTS	7.68
CONTROL STEPS	1
VOLTS/ø	230/1
ELECTRICAL	
MINIMUM CIRCUIT AMPACITY	43
MAXIMUM FUSE SIZE	45
FILTERS	
(QUANTITY) SIZE	(1) 20x20x1
TYPE	THROWAWAY
UNIT REQUIREMENTS	
OPERATING WEIGHT (LBS.)	150
ACCESSORIES	1
NOTES	1.2

ACCESSORIES

1. PROVIDE SINGLE POINT POWER CONNECTION.

NOTES

1. MOUNT ON VERTICAL PEDESTAL.
2. INTERLOCK MOTORIZED OUTSIDE AIR DAMPER TO OPEN WHEN UNIT STARTS AND CLOSE WHEN UNIT STOPS.

AIR COOLED CONDENSING UNIT SCHEDULE

MARK	CU-1
LOCATION	GRADE
MANUFACTURER	TRANE
MODEL NUMBER	4TTB3030
NOMINAL TONS	2.5
COMPRESSOR	
OUTDOOR DESIGN TEMPERATURE (F°)	95
NUMBER OF STAGES	1
NUMBER OF COMPRESSORS	1
CONDENSER FAN	
NUMBER OF FANS	1
MOTOR HP	1/8
ELECTRICAL	
VOLTAGE/PHASE	230/1
COMPRESSOR RLA EACH	11.1
CONDENSER FAN MOTOR FLA EACH	0.7
MINIMUM CIRCUIT AMPACITY	15
MAXIMUM FUSE SIZE	25
SEER	13
UNIT REQUIREMENTS	
UNIT WEIGHT (LBS)	250
ACCESSORIES	1, 2, 3, 4, 5, 6
NOTES	1

ACCESSORIES

1. PPROVIDE MANUFACTURER'S 24 HR/7 DAY PROGRAMMABLE THERMOSTAT WITH BATTERY BACK-UP AND AVERAGING SENSOR FOR MULTI-POINT TEMPERATURE SET POINT DETERMINATION.
2. PROVIDE ANTI-SHORT CYCLE TIMER
3. PROVIDE RUBBER ISOLATION KIT
4. PROVIDE SEACOAST KIT
5. PROVIDE CRANKCASE HEATER
6. PROVIDE HARD START KIT

NOTES

1. MOUNT ON CONCRETE HOUSEKEEPING PAD. SECURE TO PAD PER DETAIL ON SHEET M-4.
2. SIZE REFRIGERANT LINE SETS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS. REFRIGERANT PIPING DESIGN SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. PROVIDE CERTIFICATION OF LINE SIZES FOR THE INSTALLATION APPLICATION FROM THE EQUIPMENT MANUFACTURER FOR REVIEW.

AIR DEVICE SCHEDULE

MARK	Ⓐ	Ⓑ	Ⓒ	Ⓓ	Ⓔ	Ⓕ
MANUFACTURER	TITUS	TITUS	TITUS	TITUS	TITUS	TITUS
MODEL	TMS-AA	4FL	350 FL	4FL	271 FL	TMS-AA
UNIT						
TYPE	SUPPLY	RETURN	SIDEWALL SUPPLY	EXHAUST	SIDEWALL EXHAUST	SUPPLY/RETURN
FACE/NECK (INCHES)	24x24 (SEE TABLE 1)	24x24 (SEE TABLE 2)	SEE PLAN	24x24/SEE PLAN	SEE PLAN	12x12/6"ø
MATERIAL	ALUMINUM	ALUMINUM	ALUMINUM	ALUMINUM	ALUMINUM	ALUMINUM
ACCESSORIES	1, 2	1, 2	1, 2	1, 2	1, 2	1, 2
PERFORMANCE						
MAX. NC LEVEL	25	24	25	26	25	25
MAX. PRESS. DROP (IN. WG.)	0.05	0.06	0.05	0.04	0.04	0.05

ACCESSORIES

1. PROVIDE SURFACE MOUNT BORDER FOR ALL AIR DEVICES LOCATED IN A HARD CEILING OR WALL.
2. PROVIDE MANUAL BALANCING DAMPER ADJUSTABLE FROM DIFFUSERS FACE FOR ANY DEVICE LOCATED IN A HARD CEILING.

NOTES

1. USE NECK SIZES BELOW ONLY IF NOT INDICATED ON PLANS.
2. PAINT DUCT WORK (HARD OR FLEX) THAT IS VISIBLE THROUGH FRONT OF AIR DEVICE MATTE BLACK.

TABLE 1

CFM RANGE	NECK SIZE	CFM RANGE	NECK SIZE
0-100	6"ø	326-475	12"ø
100-220	8"ø	476-650	14"ø
221-325	10"ø		

TABLE 2

CFM RANGE	NECK SIZE
0-400	12"ø
401-650	14"ø
651-850	16"ø

NOTES: FLEX DIA. SIZE SHALL EQUAL NECK SIZE.

LOUVER SCHEDULE

PLAN MARK	LOCATION	SIZE (WxHxD)	AIR FLOW (CFM)	FREE AREA (SQ. FT.)	MAXIMUM VELOCITY (FPM)	MAXIMUM PRESSURE DROP (IN. W.G.)	MANUFACTURER & MODEL NUMBER
LV-1	TICKET BUILDING WALL	30x18x5	120	1.17	103	0.002	GREENHECK EHH-501 X
LV-2	RESTROOM BUILDING	12x20x4	-	0.62	-	-	GREENHECK ESD-435 X
LV-3	RESTROOM BUILDING	8x20x2	-	0.26	-	-	GREENHECK ESJ-202

ACCESSORIES

1. PROVIDE RECESSED FRAME FOR FLUSH MOUNTING IN WALL FOR LV-1.
2. PROVIDE FLANGED FRAME FOR LV-2 AND LV-3.

REMARKS

1. PRIME AND PAINT LOUVER COLOR SELECTED BY ARCHITECT.
2. REFER TO ARCHITECTURAL PLANS AND ELEVATIONS FOR FINAL LOUVER LOCATIONS AND ELEVATIONS.

VENTILATION REQUIREMENTS

OUTDOOR AIRFLOW CALCULATIONS FOR CONSTANT VOLUME SYSTEMS

THE REQUIRED OUTSIDE AIR FOR EACH SYSTEM WAS CALCULATED USING THE GUIDELINES SET FORTH IN ASHRAE STANDARD 62.1-2007 AND APPROVED ADDENDA. THE APPROPRIATE PEOPLE OUTDOOR AIR RATE (Rp) AND THE AREA OUTDOOR AIR RATES (Ra) WERE SELECTED FROM TABLE 6-1 BASED ON THE OCCUPANCY CATEGORY FOR EACH SPACE.

THE RESULTS ARE SUMMARIZED AS FOLLOWS:

AHU NUMBER	1
OCCUPANCY CATEGORY	OFFICE SPACE
PEOPLE OUTDOOR AIR RATE (Rp)/NO OF PEOPLE / CFM	5 CFM/PERSON / 8 / 40 CFM
AREA OUTDOOR AIR RATE (Ra) / SUITE AREA / CFM	0.06 CFM/SF / 470 SF / 28.2 CFM
BREATHING ZONE OUTDOOR AIRFLOW (Vbz) / PEOPLE + AREA	68.2 CFM
ZONE AIR DISTRIBUTION EFFECTIVENESS (Ez)	1.0, CEILING SUPPLY
REQUIRED OUTDOOR AIRFLOW (Vot)	68.2 CFM
OUTDOOR AIRFLOW SPECIFIED	120 CFM

HOOD SCHEDULE

MARK	EAD-1, 2
MANUFACTURER	GREENHECK
MODEL	SDLE
HOOD	
SERVES	EF-2, 3
AIR FLOW (CFM)	1200
THROAT AREA (FT^2)	2.25
MAX. VELOCITY (FPM)	533
UNIT REQUIREMENTS	
OPER. WEIGHT (LBS)	500
ACCESSORIES	1, 2, 3
NOTES	1

ACCESSORIES

1. PROVIDE INSECT SCREEN.
2. PROVIDE MANUFACTURER'S 12" ROOF CURB.
3. PROVIDE MANUFACTURER'S DAMPER.

NOTES

1. SECURE CURB TO ROOF AND HOOD TO CURB PER MANUFACTURER'S RECOMMENDATIONS TO WITHSTAND HURRICANE FORCE WINDS.

EXHAUST FAN SCHEDULE

MARK	EF-1	EF-2, 3
MANUFACTURER	GREENHECK	GREENHECK
MODEL	SP-B70	SQ-130-B
FAN		
LOCATION	RESTROOM CEILING	RESTROOM CHASE
AIR FLOW (CFM)	50	1200
STATIC PRESS. (IN. WG.)	0.25	0.5
DRIVE/TYPE	DIRECT/CENT.	DIRECT/CENT.
H.P. (WATTS)/RPM	(45)	1/4/1140
VOLTS/PH	115/1	115/1
UNIT REQUIREMENTS		
OPERATING WEIGHT (LBS.)	20	100
ACCESSORIES	1, 2, 3	1, 2, 4
NOTES		1

ACCESSORIES

1. PROVIDE SPEED CONTROLLER FOR SYSTEM BALANCING.
2. PROVIDE BACKDRAFT DAMPER.
3. PROVIDE MANUFACTURER'S FLASHING FLANGE, EQUIVALENT TO MODEL RFC-7. SEAL PENETRATION WATER TIGHT.
4. PROVIDE HANGING VIBRATION ISOLATORS, COMPATIBLE WITH VERTICAL MOUNT

NOTES

1. MOUNT FAN IN VERTICAL, DISCHARGE POINTING UP

HVAC ABBREVIATIONS

ABBREVIATION	DESCRIPTION
AFF	ABOVE FINISHED FLOOR
AFMS	AIRFLOW MONITORING STATION
AHU	AIR HANDLING UNIT
AS	AIR SEPARATOR
ASHRAE	AMERICAN SOCIETY OF HEATING, REFRIGERATING AND AIR CONDITIONING ENGINEERS
BMS	BUILDING MANAGEMENT SYSTEM
BTU	BRITISH THERMAL UNITS
CFM	CUBIC FEET PER MINUTE
CH	CHILLER
CHWR	CHILLED WATER RETURN
CHWS	CHILLED WATER SUPPLY
CT	COMPRESSION TANK
CU	CONDENSING UNIT
D	DEPTH
DB	DRY BULB
DC	DRY COOLER
DEG F	DEGREES FAHRENHEIT
EA	EXHAUST AIR OR EACH
EER	ENERGY EFFICIENCY RATIO
EF	EXHAUST FAN
ENT	ENTERING
ESP	EXTERNAL STATIC PRESSURE
ETC	ET CETERA
EXT	EXTERNAL
FCU	FAN COIL UNIT
FD	FIRE DAMPER
FLA	FULL LOAD AMPS
FPM	FEET PER MINUTE
FT	FEET
FT-H20	FEET OF WATER
GAL	GALLONS
GPM	GALLONS PER MINUTE
H	HEIGHT
HP	HORSEPOWER
IN	INCHES
IN.W.G.	INCHES OF WATER - GAGE
KEF	KITCHEN EXHAUST FAN
KSF	KITCHEN SUPPLY FAN
KW	KILOWATTS
L	LENGTH
LBS	POUNDS
LV	LOUVER
LVG	LEAVING
MAX	MAXIMUM
MBH	THOUSAND BRITISH THERMAL UNITS
MCA	MAXIMUM CURRENT AMPACITY
MIN	MINIMUM
MOCP	MAXIMUM OVERCURRENT PROTECTION
MVD	MANUAL VOLUME DAMPER
N/A	NONE ASSOCIATED/NOT APPLICABLE
NC	NORMALLY CLOSED
NIC	NOT IN CONTRACT
NO	NUMBER OR NORMALLY OPEN
OA	OUTSIDE AIR
OAI	OUTSIDE AIR INTAKE
P	PUMP
PH	PHASE
PRESS	PRESSURE
PSIG	POUNDS PER SQUARE INCH - GAGE
QTY	QUANTITY
RA	RETURN AIR
RLA	RUNNING LOAD AMPS
RPM	REVOLUTIONS PER MINUTE
SA	SUPPLY AIR
SD	SMOKE DAMPER
SEER	SEASONAL ENERGY EFFICIENCY RATIO
SF	SQUARE FEET
SMACNA	SHEET METAL AND AIR CONDITIONING CONTRACTORS NATIONAL ASSOCIATION
SP	STATIC PRESSURE
SQ	SQUARE
TEMP	TEMPERATURE
UL	UNDERWRITERS LABORATORIES
V	VOLTAGE
VAV	VARIABLE AIR VOLUME
VFD	VARIABLE FREQUENCY DRIVE
W	WIDTH
WB	WET BULB

HVAC LEGEND

SYMBOL	DESCRIPTION
DUCTWORK	
	SUPPLY DUCT RISER
	RETURN DUCT RISER
	EXHAUST DUCT RISER
	SUPPLY DUCT DOWN
	RETURN DUCT DOWN
	EXHAUST DUCT DOWN
	DUCT CONTINUES
MVD	MANUAL VOLUME DAMPER
BDD	BACKDRAFT DAMPER
M	MOTORIZED DAMPER
FD	FIRE DAMPER
SD	SMOKE DAMPER
F/SD	COMBINATION FIRE/SMOKE DAMPER
	DUCT ACCESS DOOR
DROP / RISE	DUCT RISE OR DROP IN DIRECTION OF FLOW
	SQUARE TO ROUND DUCT TRANSITION
	TERMINAL UNIT
	CROSS HATCHED AREA 36 INCH MINIMUM CLEARANCE FOR HEATER ACCESS. MAINTAIN CLEARANCE.
	FAN POWERED TERMINAL UNIT
	SINGLE LINE DUCTWORK
	BELL MOUTH TAP W/MVD
	MVD HAS REMOTE CONTROL IN RIGID CEILING
	FLEXIBLE DUCT
	SUPPLY OUTLET (SEE AIR DEVICE SCHEDULE)
	RETURN INLET (SEE AIR DEVICE SCHEDULE)
	EXHAUST INLET (SEE AIR DEVICE SCHEDULE)
PIPING	
	PIPING CONTINUES
	ANCHOR POINT
	PIPE GUIDE
	PIPE ELBOW DOWN
	PIPE ELBOW UP
	EXPANSION COMPENSATOR
	BALL VALVE (SHOWN WITH OR WITHOUT HANDLE)
	BUTTERFLY VALVE
	BALANCING VALVE WITH PRESSURE TAPS
	2-WAY AUTOMATIC CONTROL VALVE
	3-WAY AUTOMATIC CONTROL VALVE
	THERMOMETER IN WELL
	PRESSURE/TEMPERATURE TAP
	UNION
	FLEXIBLE PIPING
	CAPPED END
CD	CONDENSATE DRAIN PIPING
R	REFRIGERANT PIPING
CHWS	CHILLED WATER SUPPLY
CHWR	CHILLED WATER RETURN
CD	UNDERGROUND CONDENSATE DRAIN PIPING
R	UNDERGROUND REFRIGERANT PIPING
CHWS	UNDERGROUND CHILLED WATER SUPPLY
CHWR	UNDERGROUND CHILLED WATER RETURN
SYMBOLS	
T	THERMOSTAT
TS	TEMPERATURE SENSOR
H	HUMIDISTAT
CO_2	CARBON DIOXIDE SENSOR
CO	CARBON MONOXIDE REMOTE SENSOR
NO	NITROGEN OXIDE REMOTE SENSOR
A 100 / 8x8	AIR DEVICE TAG AIRFLOW (CFM) SIZE (INxIN)
SD	DUCT SMOKE DETECTOR
S	FAN POWER SWITCH
UC 100	UNDER CUT DOOR AIR FLOW AMOUNT (CFM)
1	REFERENCE NOTE
X / X-X	DETAIL NUMBER SHEET DETAIL APPEARS
X / X	TYPE OF EQUIPMENT EQUIPMENT NUMBER
X / X-X	SECTION NUMBER SHEET SECTION APPEARS

NOTE: SCREENED SYMBOLS OR TEXT (EXAMPLE: AHU) INDICATE EXISTING EQUIPMENT OR CONDITIONS.

GENERAL NOTES

1. INSTALLATION OF EQUIPMENT SHALL COMPLY WITH EQUIPMENT MANUFACTURER'S INSTALLATION AND CLEARANCE REQUIREMENTS.
2. THE CONTRACTOR SHALL VERIFY DIMENSIONS WHERE EQUIPMENT IS TO BE INSTALLED PRIOR TO THE START OF CONSTRUCTION. DISCREPANCIES SHALL BE REPORTED TO THE ARCHITECT PRIOR TO THE START OF CONSTRUCTION. DO NOT SCALE FROM DRAWINGS.
3. ALL NEW SUPPLY AND RETURN DUCTWORK SHALL BE ANTI-MICROBIAL LINED FIBERGLASS DUCTBOARD, 2 INCHES THICK WITH A MINIMUM INSTALLED R VALUE OF 6. SEAL ALL JOINTS AND SEAMS WITH GLASS FABRIC AND MASTIC MEETING UL 181 AND MEETING THE REQUIREMENTS OF THE DUCT SYSTEM MANUFACTURER.
4. ALL NEW EXHAUST AND OUTSIDE AIR DUCTWORK SHALL BE GALVANIZED STEEL.
5. MAXIMUM LENGTH OF FLEX DUCTWORK SHALL BE 7 FEET.
6. ALL RESTROOM MAKE-UP AIR SHALL BE VIA GALVANIZED STEEL TRANSFER DUCTS WITH ZERO LEAKAGE BACKDRAFT DAMPERS AND DOOR UNDERCUTS.
7. EXTERNALLY INSULATE ALL LOUVER PLENUMS AND BLANKOFFS, REFER TO SPECIFICATIONS FOR REQUIREMENTS.
8. REFER TO ARCHITECTURAL SHEETS FOR LOUVER MOUNTING HEIGHTS.
9. CONTRACTOR SHALL MAINTAIN A MINIMUM SEPARATION OF 10 FEET FROM ANY OUTSIDE AIR INTAKE AND ANY BATHROOM EXHAUST OR VENT THROUGH THE ROOF.
10. ROUTE CONDENSATE TO UNDERGROUND RAIN WATER CISTERN. COORDINATE FINAL CONNECTION TO THE CISTERN WITH THE RAIN WATER CISTERN VENDOR.
11. REFRIGERANT PIPING SIZING AND ROUTING DESIGN SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. CONTRACTOR SHALL TAKE INTO ACCOUNT LENGTH OF RUN AND FIELD CONDITIONS WHEN SIZING THE PIPING TO ENSURE ALL LOSSES ARE ACCOUNTED FOR.
12. ROUTE ALL UNDERGROUND REFRIGERANT PIPING IN 6"ø LONG RADIUS PVC PIPING SLEEVES.
13. ALL SENSORS/CONTROLS SHALL BE LOCATED TO ALLOW THE PARALLEL APPROACH BY A PERSON IN A WHEELCHAIR AND MOUNTED 54" AFF. WHERE PARALLEL APPROACH IS NOT POSSIBLE, SENSORS/CONTROLS SHALL BE MOUNTED 48" AFF.
14. PROVIDE 4-INCH THICK CONCRETE HOUSEKEEPING PAD WITH 6-INCH BORDER ALL AROUND FOR ALL GRADE MOUNTED MECHANICAL EQUIPMENT.
15. DIVISION 15 CONTRACTOR SHALL FURNISH AND INSTALL ALL MOTOR STARTERS, RELAYS, AND LOW-VOLTAGE WIRING TO ALLOW THE MECHANICAL EQUIPMENT TO PERFORM AS REQUIRED BY THE SEQUENCE OF OPERATIONS.
16. (AN INDEPENDANT) CONTRACTOR SHALL PERFORM A COMPLETE CERTIFIED TEST AND BALANCE OF EACH MECHANICAL SYSTEM (INCLUSIVE OF EXHAUST FANS, SPLIT SYSTEM AIR HANDLING UNITS, AND CEILING DEVICES). SEE SPECIFICATIONS FOR DETAILS.
17. THE CONTRACTOR SHALL INSTALL A COMPLETE AND FULLY OPERATIONAL SYSTEM BASED ON THE INTENT OF THESE DRAWINGS.
18. VERIFY ALL MECHANICAL IDENTIFICATION LABEL AND TAG DESIGNATIONS WITH THE OWNER BEFORE MAKING AND INSTALLING LABELS AND TAGS.

HVAC DESIGN DATA

WALL U VALUE (BTU/HR-FT^2-F)			0.0919
ROOF U VALUE (BTU/HR-FT^2-F)			0.0468
WINDOW U VALUE (BTU/HR-FT^2-F)			0.41
WINDOW SOLAR HEAT GAIN COEFFICIENT			0.37
OUTDOOR DESIGN CONDITIONS	SUMMER		WINTER
	DB (F)	WB (F)	DB (F)
	95	78	43
INDOOR AREA DESIGN CONDITIONS	SUMMER		WINTER
	DB (F)	% HUMIDITY	DB (F)
AHU-1	75	50	70

BUILDING PRESSURIZATION TABLE

SYSTEM	AHU-1
OUTSIDE AIR SPECIFIED	+ 120 CFM
EF-1	- 50 CFM
TOTAL EXHAUST	- 50 CFM
RESULTING POSITIVE PRESSURE	+ 70 CFM
NUMBER OF DOORS TO OUTSIDE	1
POSITIVE PRESSURE PER DOOR	+ 70 CFM

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