DESIGN WEATHER PARAMETERS

Design Parameters:

City Name	**Houston**	
Location	**Texas**	
Latitude	**30.0**	Deg.
Longitude	**95.4**	Deg.
Elevation	**108.0**	ft
Summer Design Dry-Bulb	**96.0**	°F
Summer Coincident Wet-Bulb	**77.0**	°F
Summer Daily Range	**18.2**	°F
Winter Design Dry-Bulb	**27.0**	°F
Winter Design Wet-Bulb	**22.7**	°F
Atmospheric Clearness Number	**0.90**	
Average Ground Reflectance	**0.20**	
Soil Conductivity	**0.800**	BTU/(hr-ft-°F)
Local Time Zone (GMT +/- N hours)	**6.0**	hours
Consider Daylight Savings Time	**No**	
Simulation Weather Data	**noneN/A**	
Current Data is	**2001 ASHRAE Handbook**	
Design Cooling Months	**January to December**	

HVAC LOAD CALCULATIONS

Air System Information

Air System Name	**TOTAL**	Number of zones	**1**
Equipment Class	**PKG ROOF**	Floor Area	**5660.0** ft²
Air System Type	**SZCAV**	Location	**Houston, Texas**

Sizing Calculation Information
Zone and Space Sizing Method:

Zone CFM	**Sum of space airflow rates**	Calculation Months	**Jan to Dec**
Space CFM	**Individual peak space loads**	Sizing Data	**Calculated**

Central Cooling Coil Sizing Data

Total coil load	**15.9**	Tons	Load occurs at	**Jul 1300**	
Total coil load	**190.4**	MBH	OA DB / WB	**94.0 / 76.5**	°F
Sensible coil load	**126.0**	MBH	Entering DB / WB	**80.4 / 68.1**	°F
Coil CFM at Jul 1300	**4941**	CFM	Leaving DB / WB	**56.7 / 55.6**	°F
Max block CFM	**4941**	CFM	Coil ADP	**54.0**	°F
Sum of peak zone CFM	**4941**	CFM	Bypass Factor	**0.100**	
Sensible heat ratio	**0.662**		Resulting RH	**60**	%
ft²/Ton	**356.8**		Design supply temp.	**58.0**	°F
BTU/(hr-ft²)	**33.6**		Zone T-stat Check	**1 of 1**	OK
Water flow @ 16.0 °F rise	**N/A**		Max zone temperature deviation	**0.0**	°F

Central Heating Coil Sizing Data

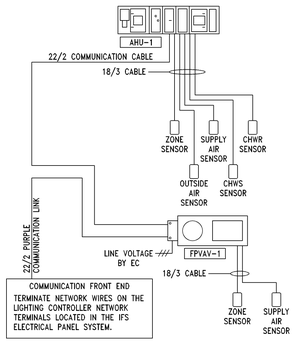
Max coil load	**60.2**	MBH	Load occurs at	**Des Htg**	
Coil CFM at Des Htg	**4941**	CFM	BTU/(hr-ft²)	**10.6**	
Max coil CFM	**4941**	CFM	Ent. DB / Lvg DB	**56.0 / 67.3**	°F
Water flow @ 20.0 °F drop	**N/A**				

Supply Fan Sizing Data

	DESIGN COOLING			DESIGN HEATING		
	COOLING DATA AT Jul 1300			HEATING DATA AT DES HTG		
	COOLING OA DB / WB 94.0 °F / 76.5 °F			HEATING OA DB / WB 27.0 °F / 22.7 °F		
ZONE LOADS	**Details**	**Sensible (BTU/hr)**	**Latent (BTU/hr)**	**Details**	**Sensible (BTU/hr)**	**Latent (BTU/hr)**
Window & Skylight Solar Loads	0 ft²	0	-	0 ft²		-
Wall Transmission	0 ft²	0	-	0 ft²	0	-
Roof Transmission	0 ft²	0	-	0 ft²	0	-
Window Transmission	0 ft²	0	-	0 ft²	0	-
Skylight Transmission	0 ft²	0	-	0 ft²	0	-
Door Loads	0 ft²	0	-	0 ft²	0	-
Floor Transmission	0 ft²	0	-	0 ft²	0	-
Partitions	0 ft²	0	-	0 ft²	0	-
Ceiling	0 ft²	0	-	0 ft²	0	-
Overhead Lighting	8177 W	16027	-	0	0	-
Task Lighting	4554 W	12751	-	0	0	-
Electric Equipment	3960 W	12430	-	0	0	-
People	137	21208	26128	0	0	0
Infiltration	-	0	0	-	0	0
Miscellaneous	-	0	0	-	0	0
Safety Factor	10% / 10%	6242	2613	20%	0	0
>> Total Zone Loads	**-**	**68657**	**28741**	**-**	**0**	**0**
Zone Conditioning	-	80951	28741	-	0	0
Plenum Wall Load	20%	0	-	0	0	-
Plenum Roof Load	70%	0	-	0	0	-
Plenum Lighting Load	30%	8370	-	0	0	-
Return Fan Load	4941 CFM	0	-	4941 CFM	0	-
Ventilation Load	1435 CFM	29621	35573	1449 CFM	63912	0
Supply Fan Load	4941 CFM	3663	-	4941 CFM	-3663	-
Space Fan Coil Fans	-	0	-	-	0	-
Duct Heat Gain / Loss	5%	3433	-	5%	0	-
>> Total System Loads	**-**	**126038**	**64313**	**-**	**60249**	**0**
Central Cooling Coil	-	126038	64315	-	0	0
Central Heating Coil	-	0	-	-	60249	-
>> Total Conditioning	**-**	**126038**	**64315**	**-**	**60249**	**0**
Key:	**Positive values are clg loads Negative values are htg loads**			**Positive values are htg loads Negative values are clg loads**		

HVAC LOAD CALCULATIONS | NTS | 00D-M0401-J00-LOAD | J 08/11/11

CHILLED WATER AIR HANDLING UNIT WITH ELECTRIC HEAT NETWORK WIRING AND SEQUENCE



NOTES:

(1) ALL WIRE SHALL BE 18/3 UNLESS OTHERWISE INDICATED.
(2) NUMBER OF CABLES FURNISHED BY HVAC MANUFACTURER IS INDICATED BY NUMBER OF TICK MARKS ACROSS THE LINE.
(3) PURPLE 22/2 WIRE IS PROVIDE BY HVAC SUPPLIER AND IS PLENUM RATED.
(4) SCHEMATIC IS FOR REFERENCE ONLY. AT TIME OF CONSTRUCTION, THE HVAC SUPPLIER WILL PROVIDE A COMPLETE DIAGRAM FOR INSTALLATION. SEE RESPONSIBILITY SCHEDULES, THIS SHEET, FOR A LIST OF ALL COMPONENTS AND SENSORS REQUIRING FIELD INSTALLATION.

CHILLED WATER AIR HANDLING UNIT (AHU) SEQUENCE OF OPERATIONS

MANUFACTURER SHALL FURNISH AND/OR INSTALL ALL NECESSARY CONTROL DEVICES TO ACCOMPLISH THE FOLLOWING SEQUENCE OF OPERATION (REFER TO RESPONSIBILITY SCHEDULE FOR FIELD INSTALLATION REQUIREMENTS):

DURING OCCUPIED HOURS WHEN THE OUTDOOR TEMPERATURE IS ABOVE 55 DEGREES FAHRENHEIT THE AIR HANDLING UNIT WILL BE SUPPLIED WITH 44 DEGREE FAHRENHEIT CHILLED WATER. WHEN IN THE OCCUPIED MODE, THE AIR HANDLING UNIT FAN WILL BE ENERGIZED, THE OUTDOOR AIR/RETURN AIR DAMPER ACTUATOR SHALL OPEN THE OUTDOOR AIR DAMPER TO THE MINIMUM POSITION (ADJUSTABLE), AS THE SPACE TEMPERATURE RISES ABOVE THE ROOM TEMPERATURE SENSOR COOLING SETPOINT OF 73 DEGREES FAHRENHEIT (ADJUSTABLE), THE CONTROL VALVE IN THE CHILLED WATER PIPE SHALL MODULATE TO MAINTAIN ROOM SETPOINT TEMPERATURE.

AS THE SPACE TEMPERATURE FALLS BELOW THE ROOM TEMPERATURE SENSOR OCCUPIED HEATING SETPOINT (ADJUSTABLE) THE OUTSIDE AIR/RETURN AIR DAMPER ACTUATOR SHALL MODULATE THE OUTSIDE AIR DAMPER TO THE MINIMUM POSITION, AND THE ELECTRIC RESISTANCE HEATER SHALL BE ENERGIZED IN STAGES (WHERE APPLICABLE). IF THE MIXED AIR TEMPERATURE DROPS BELOW 40 DEGREES FAHRENHEIT (ADJUSTABLE) AS SENSED BY A LOW LIMIT THERMOSTAT SERPENTINED ACROSS THE CHILLED WATER COIL ENTERING AIR SIDE, THE OUTSIDE AIR DAMPER SHALL CLOSE, THE RETURN AIR DAMPER SHALL OPEN, AND THE ELECTRIC HEATER SHALL BE FULLY ENERGIZED AND THE CHILLED WATER VALVE SHALL FULLY OPEN.

DURING UNOCCUPIED MODE, THE AIR HANDLING UNIT FAN WILL BE DEENERGIZED, AND THE OUTDOOR AIR/RETURN AIR DAMPER ACTUATOR SHALL CLOSE THE OUTDOOR AIR DAMPER. AS THE SPACE TEMPERATURE FALLS BELOW THE ROOM TEMPERATURE SENSOR UNOCCUPIED HEATING SETPOINT (ADJUSTABLE), AIR HANDLING UNIT FAN SHALL START, AND THE ELECTRIC HEAT SHALL BE FULLY ENABLED. WHEN THE SPACE TEMPERATURE RISES 5 DEGREES FAHRENHEIT ABOVE THE ROOM TEMPERATURE SENSOR UNOCCUPIED HEATING SETPOINT THE AIR HANDLING UNIT FAN AND HEATER SHALL BE DEENERGIZED.

MANUFACTURER PROVIDED PAN OVERFLOW SWITCH WILL DISABLE ALL FANS, COOLING, HEATING, AND CLOSE OUTDOOR AIR DAMPER IF HIGH WATER IS SENSED IN THE PAN.

A DUCT MOUNTED SMOKE DETECTOR SHALL DEENERGIZE THE AIR HANDLING UNIT FAN AND TOILET EXHAUST FAN, AND CLOSE THE OUTDOOR AIR DAMPER IN BOTH THE OCCUPIED AND UNOCCUPIED MODES WHENEVER SMOKE IS SENSED.

SETPOINTS:

OCCUPIED HEATING: 70°F COOLING: 74°F
UNOCCUPIED HEATING: 60°F COOLING: 85°F

FAN POWERED PARALLEL VAV (FPVAV) SEQUENCE OF OPERATIONS

MANUFACTURER SHALL FURNISH AND/OR INSTALL ALL NECESSARY CONTROL DEVICES TO ACCOMPLISH THE FOLLOWING SEQUENCE OF OPERATION (REFER TO RESPONSIBILITY SCHEDULE FOR FIELD INSTALLATION REQUIREMENTS):

AT ALL TIMES, THE VARIABLE AIR VOLUME TERMINAL UNIT PRIMARY AIR VALVE SHALL MODULATE TO MAINTAIN THE SPACE TEMPERATURE.

IF THE SPACE TEMPERATURE DROPS ONE DEGREE BELOW HEATING SETPOINT WITH THE DAMPER AT MINIMUM POSITION, THE UNIT FAN SHALL ENERGIZE. IF THE SPACE TEMPERATURE DROPS TWO DEGREES BELOW HEATING SETPOINT, THE UNIT ELECTRIC HEAT SHALL ENERGIZE IN STAGES (WHERE APPLICABLE). THE HEAT AND FAN SHALL REMAIN ON UNTIL THE SPACE TEMPERATURE IS SATISFIED.

THE TERMINAL UNIT DAMPER SHALL FULLY (CLOSE/OPEN) AND THE FAN SHALL (ENERGIZE/DEENERGIZE) UPON A SIGNAL FROM THE FIRE ALARM SYSTEM.

CHILLED WATER AIR HANDLING UNIT RESPONSIBILITY SCHEDULE

ITEM	FURNISHED BY			INSTALLED OR PERFORMED BY			RE-USE EXISTING	N/A	REMARKS
	LSD&C	LANDLORD	CONTR.	LANDLORD	CONTR.	OTHER			
AIR HANDLING UNIT WITH CHILLED WATER COIL	AC				MC				
FAN CONTACTOR/DISCONNECT SWITCH	AC					AC			
ELECTRIC HEATER WITH SINGLE POINT CONNECTION AND CONTACTOR	AC					AC			
MIXING BOX WITH ACTUATOR AND 0-10 VOLT ADAPTER								●	
MINIMUM OUTSIDE AIR DAMPER	AC				MC				
HOT WATER COIL								●	
VIBRATION ISOLATORS	AC				MC				
FAN MOTOR, SHEAVES AND BELTS	AC					AC			CHANGES REQUIRED FOR BALANCE ARE PROVIDED MC
CONDENSATE PAN OVERFLOW SWITCH	AC					AC			
FAN PROVING SWITCH	AC					AC			
CHILLED WATER AND/OR HOT WATER VALVE WITH ACTUATOR	AC				MC				
BAS CONTROLLER	AC				MC				
SUPPLY AIR TEMPERATURE SENSOR	AC				MC				
SPACE TEMPERATURE SENSOR	AC				MC				
OUTSIDE AIR TEMPERATURE SENSOR	AC				MC				
CARBON DIOXIDE SENSOR								●	
SUPPLY AND RETURN WATER TEMPERATURE SENSORS	AC				MC				CLAMP TO PIPE
SINGLE ZONE VAV FAN CONTROL								●	
AIR HANDLING UNIT COMMISSIONING	AC					AC			CALL HVAC SUPPLIER
FREEZE PROTECTION THERMOSTAT	AC					AC			
COIL RECIRCULATION PUMPS								●	

NETWORK WIRING AND SEQUENCE | NTS | 00D-M0401-E05-SCHD | E 08/02/12

NOTE TO CONTRACTOR

ITEM(S) NOT SHOWN ON ANY OF THE RESPONSIBILITY SCHEDULES ARE THE RESPONSIBILITY OF THE CONTRACTOR.

LOCAL AREA REQUIREMENTS

YES	NO			YES	NO	
☐	☒	1.	SMOKE EVACUATION	☐	☒	5. SPECIAL CURB HEIGHT REQUIREMENTS
☐	☒	2.	CARBON DIOXIDE MONITORING	☐	☒	6. FIVE MILE COASTAL PROXIMITY
☐	☒	3.	HURRICANE ZONE	☐	☒	7. OTHERS, I.E. METHANE, CARBON MONOXIDE, SOUND SENSITIVE, ETC. DESCRIPTION. . .
☐	☒	4.	SEISMIC ZONE			

ABBREVIATIONS, RESPONSIBILITY SCHEDULES

AC	HVAC EQUIPMENT SUPPLIER	GC	GENERAL CONTRACTOR
AHJ	AUTHORITY HAVING JURISDICTION	LC	LANDLORD CONTRACTOR
BAS	BUILDING AUTOMATION SYSTEM	LD	LIGHTING PACKAGE DISTRIBUTOR
EC	ELECTRICAL CONTRACTOR	LL	LANDLORD
FAC	FIRE ALARM CONTRACTOR	LSD&C	LIMITED STORE DESIGN & CONSTRUCTION
		MC	MECHANICAL CONTRACTOR

FAN POWERED VARIABLE AIR VOLUME (FPVAV) & VARIABLE AIR VOLUME (VAV) BOX RESPONSIBILITY SCHEDULE

ITEM	FURNISHED BY			INSTALLED OR PERFORMED BY			RE-USE EXISTING	N/A	REMARKS
	LSD&C	LANDLORD	CONTR.	LANDLORD	CONTR.	OTHER			
PARALLEL ARRANGEMENT VAV BOX (WITH HEAT AND NO HEAT OPTIONS)	AC				MC				
NON-FAN POWERED VAV BOX								●	
FAN POWERED BOX **ELECTRICAL** DISCONNECT	AC					AC			
NON-FAN POWERED BOX **ELECTRICAL** DISCONNECT								●	
BAS CONTROLLER WITH INTEGRATED ACTUATOR	AC				MC				
SUPPLY AIR TEMPERATURE SENSOR	AC				MC				
SPACE TEMPERATURE SENSORS	AC				MC				
TERMINAL UNIT COMMISSIONING	AC				MC				CALL HVAC SUPPLIER

HVAC RESPONSIBILITY SCHEDULE

ITEM	FURNISHED BY			INSTALLED OR PERFORMED BY			RE-USE EXISTING	N/A	REMARKS
	LSD&C	LANDLORD	CONTR.	LANDLORD	CONTR.	OTHER			
ROOFING CUT & PATCH, INSULATED TOE KICK & CURB LEVELING.								●	HIRE LANDLORD APPROVED ROOFING CONTRACTOR
DUCT SMOKE DETECTOR			FAC		MC				
SMOKE SYSTEM ACCESSORIES, ETC.								●	
DIFFUSERS AND GRILLES	LD				MC				
DIFFUSERS/GRILLES FIRE DAMPERS								●	
WALL FIRE DAMPERS								●	
COMBINATION FIRE/SMOKE DAMPERS								●	
LOW PRESSURE DUCTWORK			MC		MC				
RECTANGULAR TO ROUND ADAPTER FOR GRILLES								●	
HIGH/MEDIUM PRESSURE DUCTWORK								●	
DUCT SUPPORTS			MC		MC				
SEISMIC BRACING								●	
DUCT HEATER(S)								●	
UNIT HEATER(S)								●	
TOILET EXHAUST FAN(S) WITH TOGGLE DISCONNECT SWITCH	LD				MC				
TOILET EXHAUST DUCTWORK WALL OR ROOF CAP			MC		MC				
PIPING AND PIPING APPURTENANCES (CIRCUIT SETTERS, ETC.)			MC		MC				
BALANCE CONTRACTOR REPORT			GC						AABC OR NEBB CERTIFIED
AS-BUILT DRAWINGS			MC						
LANDLORD CONTROL SYSTEM								●	
TEMPERATURE CONTROL SYSTEM COMPONENTS	AC				MC				
TEMPERATURE CONTROL SYSTEM WIRE	AC				MC				FINAL CONN. BY MC
YOUNG REGULATOR W/ BOWDEN CABLE			MC		MC				
LOCKING QUADRANT VOLUME DAMPER			MC		MC				
PNEUMATIC TUBING								●	
FIRE ALARM SHUTDOWN RELAY								●	
RELIEF AIR DAMPER AND ACTUATOR								●	
RELIEF AIR FAN OR RETURN AIR FAN								●	
SMOKE EVACUATION								●	
OUTSIDE AIR INTAKE HOOD/LOUVER WITH DAMPER								●	
OUTSIDE AIR INTAKE DAMPER ACTUATOR								●	
RELIEF AIR HOOD OR LOUVER WITH COUNTER-BALANCED BACKDRAFT DAMPER								●	
ECONOMIZER DAMPER								●	
ECONOMIZER DAMPER ACTUATOR								●	
OUTSIDE AIR DAMPER			MC		MC				
OUTSIDE AIR DAMPER ACTUATOR			MC		MC				

HVAC RESPONSIBILITY SCHEDULES | NTS | 00D-M0401-A00-SCHD | A 09/13/13

SHREMSHOCK
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Limitedbrands
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PROJECT INFORMATION:
24200161
BATH & BODY WORKS
THE GALLERIA II
SPACE NO: 8358O
5085 WESTHEIMER RD.
HOUSTON, TX 77056

FULL REMODEL
EASTON-G
000612.16

PKG 1+
141Sa
130840

PACKAGE:
GENERATION:
A/E PROJECT #:

SCOPE:
DESIGN TYPE:
LSD&C PROJECT #:

REVISIONS:

REQUIRED BY:	DATE

ELITE CONSTRUCTION GROUP
LAKE JACKSON, TX
PHONE: 979-285-0712
NOTE: THESE PRINTS HAVE BEEN REDUCED BY 50 PERCENT. SCALE WILL BE 50 PERCENT OF WHAT IS NOTED ON PLANS

DATE ISSUED: 3/7/14
DESIGNED BY: JPM
DRAWN BY: JPM
CHECKED BY: WRG

MECHANICAL RESPONSIBILITY SCHEDULES

DRAWING NUMBER:
M04.01