

AIR HANDLING UNIT SCHEDULE																																																																																																																																																																																																																																																																																																																																																																																																							
SUPPLY FAN												OUTSIDE	GLYCOL ENERGY RECOVERY COILS										HYDRONIC PRE-HEATING COIL (FREEZE PROTECTION)										HYDRONIC COOLING COIL										GLYCOL RE-HEAT COIL										ELECTRICAL DATA																																																																																																																																																																																																																																																																																																																																																		
TAG	MFR	MODEL NUMBER	SERVING	FAN WHEEL					MOTOR SPEED (RPM)	MOTOR SIZE (HP)	BHP (HP)	DESIGN AIRFLOW (CFM)	OUTDOOR AIR										WATER										EAT										LAT										WATER FLOW RATE (GPM)	WPD (FT WC)	TOTAL CAPACITY (BTU/H)	SENSIBLE CAPACITY (BTU/H)	HYDRONIC COOLING COIL										GLYCOL RE-HEAT COIL										ELECTRICAL DATA																																																																																																																																																																																																																																																																																																																										
				DIA (IN)	TYPE	FAN SPEED (RPM)	MOTOR TYPE	DESIGN AIRFLOW (CFM)					SUMMER					WINTER					SUMMER					WINTER					WATER FLOW RATE (GPM)					WPD (FT WC)					EAT					LAT									CAPACITY (BTU/H)	EAT (°F)	LAT (°F)	EWT (°F)	LWT (°F)	WATER FLOW RATE (GPM)	WPD (FT WC)	CAPACITY (BTU/H)	EAT (°F)	LAT (°F)	EWT (°F)	LWT (°F)	WATER FLOW RATE (GPM)	WPD (FT WC)	CAPACITY (BTU/H)	EAT (°F)	LAT (°F)	EWT (°F)	LWT (°F)	WATER FLOW RATE (GPM)	WPD (FT WC)	CAPACITY (BTU/H)	EAT (°F)	LAT (°F)	EWT (°F)	LWT (°F)	WATER FLOW RATE (GPM)	WPD (FT WC)	CAPACITY (BTU/H)	EAT (°F)	LAT (°F)	EWT (°F)	LWT (°F)	WATER FLOW RATE (GPM)	WPD (FT WC)	CAPACITY (BTU/H)	EAT (°F)	LAT (°F)	EWT (°F)	LWT (°F)	WATER FLOW RATE (GPM)	WPD (FT WC)	CAPACITY (BTU/H)	EAT (°F)	LAT (°F)	EWT (°F)	LWT (°F)	WATER FLOW RATE (GPM)	WPD (FT WC)	CAPACITY (BTU/H)	EAT (°F)	LAT (°F)	EWT (°F)	LWT (°F)	WATER FLOW RATE (GPM)	WPD (FT WC)	CAPACITY (BTU/H)	EAT (°F)	LAT (°F)	EWT (°F)	LWT (°F)	WATER FLOW RATE (GPM)	WPD (FT WC)	CAPACITY (BTU/H)	EAT (°F)	LAT (°F)	EWT (°F)	LWT (°F)	WATER FLOW RATE (GPM)	WPD (FT WC)	CAPACITY (BTU/H)	EAT (°F)	LAT (°F)	EWT (°F)	LWT (°F)	WATER FLOW RATE (GPM)	WPD (FT WC)	CAPACITY (BTU/H)	EAT (°F)	LAT (°F)	EWT (°F)	LWT (°F)	WATER FLOW RATE (GPM)	WPD (FT WC)	CAPACITY (BTU/H)	EAT (°F)	LAT (°F)	EWT (°F)	LWT (°F)	WATER FLOW RATE (GPM)	WPD (FT WC)	CAPACITY (BTU/H)	EAT (°F)	LAT (°F)	EWT (°F)	LWT (°F)	WATER FLOW RATE (GPM)	WPD (FT WC)	CAPACITY (BTU/H)	EAT (°F)	LAT (°F)	EWT (°F)	LWT (°F)	WATER FLOW RATE (GPM)	WPD (FT WC)	CAPACITY (BTU/H)	EAT (°F)	LAT (°F)	EWT (°F)	LWT (°F)	WATER FLOW RATE (GPM)	WPD (FT WC)	CAPACITY (BTU/H)	EAT (°F)	LAT (°F)	EWT (°F)	LWT (°F)	WATER FLOW RATE (GPM)	WPD (FT WC)	CAPACITY (BTU/H)	EAT (°F)	LAT (°F)	EWT (°F)	LWT (°F)	WATER FLOW RATE (GPM)	WPD (FT WC)	CAPACITY (BTU/H)	EAT (°F)	LAT (°F)	EWT (°F)	LWT (°F)	WATER FLOW RATE (GPM)	WPD (FT WC)	CAPACITY (BTU/H)	EAT (°F)	LAT (°F)	EWT (°F)	LWT (°F)	WATER FLOW RATE (GPM)	WPD (FT WC)	CAPACITY (BTU/H)	EAT (°F)	LAT (°F)	EWT (°F)	LWT (°F)	WATER FLOW RATE (GPM)	WPD (FT WC)	CAPACITY (BTU/H)	EAT (°F)	LAT (°F)	EWT (°F)	LWT (°F)	WATER FLOW RATE (GPM)	WPD (FT WC)	CAPACITY (BTU/H)	EAT (°F)	LAT (°F)	EWT (°F)	LWT (°F)	WATER FLOW RATE (GPM)	WPD (FT WC)	CAPACITY (BTU/H)	EAT (°F)	LAT (°F)	EWT (°F)	LWT (°F)	WATER FLOW RATE (GPM)	WPD (FT WC)	CAPACITY (BTU/H)	EAT (°F)	LAT (°F)	EWT (°F)	LWT (°F)	WATER FLOW RATE (GPM)	WPD (FT WC)	CAPACITY (BTU/H)	EAT (°F)	LAT (°F)	EWT (°F)	LWT (°F)	WATER FLOW RATE (GPM)	WPD (FT WC)	CAPACITY (BTU/H)	EAT (°F)	LAT (°F)	EWT (°F)	LWT (°F)	WATER FLOW RATE (GPM)	WPD (FT WC)	CAPACITY (BTU/H)	EAT (°F)	LAT (°F)	EWT (°F)	LWT (°F)	WATER FLOW RATE (GPM)	WPD (FT WC)	CAPACITY (BTU/H)	EAT (°F)	LAT (°F)	EWT (°F)	LWT (°F)	WATER FLOW RATE (GPM)	WPD (FT WC)	CAPACITY (BTU/H)	EAT (°F)	LAT (°F)	EWT (°F)	LWT (°F)	WATER FLOW RATE (GPM)	WPD (FT WC)	CAPACITY (BTU/H)	EAT (°F)	LAT (°F)	EWT (°F)	LWT (°F)	WATER FLOW RATE (GPM)	WPD (FT WC)	CAPACITY (BTU/H)	EAT (°F)	LAT (°F)	EWT (°F)	LWT (°F)	WATER FLOW RATE (GPM)	WPD (FT WC)	CAPACITY (BTU/H)	EAT (°F)	LAT (°F)	EWT (°F)	LWT (°F)	WATER FLOW RATE (GPM)	WPD (FT WC)	CAPACITY (BTU/H)	EAT (°F)	LAT (°F)	EWT (°F)	LWT (°F)	WATER FLOW RATE (GPM)	WPD (FT WC)	CAPACITY (BTU/H)	EAT (°F)	LAT (°F)	EWT (°F)	LWT (°F)	WATER FLOW RATE (GPM)	WPD (FT WC)	CAPACITY (BTU/H)	EAT (°F)	LAT (°F)	EWT (°F)	LWT (°F)	WATER FLOW RATE (GPM)	WPD (FT WC)	CAPACITY (BTU/H)	EAT (°F)	LAT (°F)	EWT (°F)	LWT (°F)	WATER FLOW RATE (GPM)	WPD (FT WC)	CAPACITY (BTU/H)	EAT (°F)	LAT (°F)	EWT (°F)	LWT (°F)	WATER FLOW RATE (GPM)	WPD (FT WC)	CAPACITY (BTU/H)	EAT (°F)	LAT (°F)	EWT (°F)	LWT (°F)	WATER FLOW RATE (GPM)	WPD (FT WC)	CAPACITY (BTU/H)	EAT (°F)	LAT (°F)	EWT (°F)	LWT (°F)	WATER FLOW RATE (GPM)	WPD (FT WC)	CAPACITY (BTU/H)	EAT (°F)	LAT (°F)	EWT (°F)	LWT (°F)	WATER FLOW RATE (GPM)	WPD (FT WC)	CAPACITY (BTU/H)	EAT (°F)	LAT (°F)	EWT (°F)	LWT (°F)	WATER FLOW RATE (GPM)	WPD (FT WC)	CAPACITY (BTU/H)	EAT (°F)	LAT (°F)	EWT (°F)	LWT (°F)	WATER FLOW RATE (GPM)	WPD (FT WC)	CAPACITY (BTU/H)	EAT (°F)	LAT (°F)	EWT (°F)	LWT (°F)	WATER FLOW RATE (GPM)	WPD (FT WC)	CAPACITY (BTU/H)	EAT (°F)	LAT (°F)	EWT (°F)	LWT (°F)	WATER FLOW RATE (GPM)	WPD (FT WC)	CAPACITY (BTU/H)	EAT (°F)	LAT (°F)	EWT (°F)	LWT (°F)	WATER FLOW RATE (GPM)	WPD (FT WC)	CAPACITY (BTU/H)	EAT (°F)	LAT (°F)	EWT (°F)	LWT (°F)	WATER FLOW RATE (GPM)	WPD (FT WC)	CAPACITY (BTU/H)	EAT (°F)	LAT (°F)	EWT (°F)	LWT (°F)	WATER FLOW RATE (GPM)

GENERAL NOTES:

A. HYDRONIC PRE-HEATING COIL SELECTIONS ARE BASED ON CLEAR WATER.

B. GLYCOL ENERGY RECOVERY COILS AND GLYCOL RE-HEAT COILS SHALL BE PROVIDED AS PART OF THE HIGH PERFORMANCE ENERGY RECOVERY SYSTEM AND SHIPPED TO THE AIR HANDLER MANUFACTURER. COILS SHALL BE FACTORY MOUNTED BY THE AIR HANDLER MANUFACTURER. REFER TO HIGH PERFORMANCE ENERGY RECOVERY SYSTEM SPECIFICATION FOR ADDITIONAL DETAILS.

C. GLYCOL ENERGY RECOVERY COILS AND GLYCOL RE-HEAT COILS ARE BASED ON 25% PROPYLENE GLYCOL.

D. MOTOR SIZE LISTED IS FOR EACH FAN MOTOR. REFER TO TYPE FOR QUANTITY. BRAKE HORSEPOWER LISTED IS FOR THE ENTIRE FAN ARRAY.

E. REFER TO DETAILS AND CONTROLS SCHEMATICS FOR COIL POSITIONS.

F. UNIT IS CUSTOM AIR HANDLING UNIT. REFER TO DETAILS ON MG 3.3 AND SPECIFICATION SECTION 237323.

G. EXHAUST GLYCOL ENERGY RECOVERY COILS ARE TO BE LOCATED IN CUSTOM ENERGY RECOVERY UNIT AND PROVIDED BY THE HIGH PERFORMANCE ENERGY RECOVERY MANUFACTURER AND SHIPPED TO THE ENERGY RECOVERY UNIT MANUFACTURER. REFER TO HIGH PERFORMANCE ENERGY RECOVERY SYSTEM SPECIFICATION FOR ADDITIONAL DETAILS.

H. MINIMUM OF 4 FANS PER UNIT AND MAXIMUM OF 6 FANS PER UNIT. PROVIDE FACTORY MOUNTED AND WIRED VARIABLE FREQUENCY DRIVES FOR EACH FAN IN THE FAN ARRAY.

I. PROVIDE UNIT WITH FACTORY MOUNTED AND WIRED LIGHTS. PROVIDE SWITCH ON EXTERIOR OF UNIT. PROVIDE JUNCTION BOX FOR CONNECTION BY DIVISION 26.

J. PROVIDE FACTORY WIRED AND MOUNTED GFCI RECEPTACLE. PROVIDE JUNCTION BOX FOR CONNECTION BY DIVISION 25.

NOTES:

1. COOLING COIL SHALL BE SELECTED WITH A MINIMUM TUBE VELOCITY OF 4.45 FPS AT DESIGN FLOW RATE FOR TURBULENT WATER FLOW IN COIL AT REDUCED LOAD.

2. COOLING COIL SHALL BE SELECTED WITH A MINIMUM TUBE VELOCITY OF 5.75 FPS AT DESIGN FLOW RATE FOR TURBULENT WATER FLOW IN COIL AT REDUCED LOAD.

EXISTING COOLING TOWER SCHEDULE

TAG	MFR	MODEL NUMBER	MINIMUM HEAT REJECTION RATE (BTUH)	WATER FLOW RATE (GPM)	EWT (°F)	LWT (°F)	WPD (°F)	AMBIENT WET BULB (°F)	EVAPORATED WATER RATE (GPM)	AIRFLOW (CFM)	FAN TYPE	FANS				NUMBER OF CIRCUITS	BASIN HEATER(S)			OPERATING WEIGHT (LBS)	NOTES				
												ELECTRICAL DATA		SERVICE											
												MOTOR SIZE EA (HP)		POWER (KW)											
												(V)	(PH)	(HZ)	(V)	(PH)	(HZ)	(V)	(PH)			(HZ)	(V)	(PH)	(HZ)
EX CT-1	TOWER TECH	TTXL-101975	15,000,000	3,000	100	90	15.0	80	15.6	143,590	DD (10)	7.5	460	3	60	2	12	480	3	60	30,200	1			

NOTES:

1. TOWER IS EXISTING TO REMAIN. ORIGINAL TOWER SELECTED FOR 2.200 GPM AT 95°F EWT / 85°F LWT AT 80°F WB. TOWER OPERATION WILL CHANGE TO THE SCHEDULED PERFORMANCE. BALANCE TOWER TO NEW FLOW RATE.

LABORATORY EXHAUST FAN SCHEDULE

TAG	MANUFACTURER	MODEL NUMBER	SERVING	TYPE	AIRFLOW (CFM)	ESP (IN WC)	FAN WHEEL (RPM)	DRIVE TYPE	SOUND PRESSURE (dBA)	CONTROL METHOD	MOTOR (HP)	ELECTRICAL DATA					WEIGHT (LBS)	NOTES
												BHP (HP)	EAT (°F)					
													(V)	(PH)	(HZ)	(V)		
LEF-01	M.K. PLASTICS	AXJET-S 4900	ERU-1 (1ST FLOOR)	HIGH PLUME DILUTION FAN	29,250	4.50	820	DIRECT	90	BAS	75	31.4	460	3	60	5000	1.4	
LEF-02	M.K. PLASTICS	AXJET-S 4900	ERU-1 (1ST FLOOR)	HIGH PLUME DILUTION FAN	29,250	4.50	820	DIRECT	90	BAS	75	31.4	460	3	60	5000	1.4	
LEF-03	M.K. PLASTICS	AXJET-S 5425	ERU-2 (SECOND FLOOR)	HIGH PLUME DILUTION FAN	38,750	4.50	770	DIRECT	92	BAS	100	42.8	460	3	60	6000	1.4	
LEF-04	M.K. PLASTICS	AXJET-S 5425	ERU-2 (SECOND FLOOR)	HIGH PLUME DILUTION FAN	38,750	4.50	770	DIRECT	92	BAS	100	42.8	460	3	60	6000	1.4	

NOTES:

1. LAB EXHAUST FANS ARE A FAN ARRAY. FAN MOTOR SIZES ARE SIZED FOR FAN REDUNDANCY. BHP SCHEDULED IS NORMAL FAN OPERATION FOR BOTH FANS RUNNING AT DESIGN MAX WITH BOTH FANS OPERATING.

2. PROVIDE WITH DISCONNECT SWITCH.

3. MOTOR SHALL BE RATED FOR USE WITH VARIABLE FREQUENCY DRIVE.

4. FAN SHALL HAVE INTEGRAL DISCHARGE NOZZLE. EFFECTIVE PLUME HEIGHT SHALL BE MINIMUM 30'. DISCHARGE NOZZLE SHALL BE MOUNTED ON ROOF CURB ON ROOF. FAN SHALL MAINTAIN 3,000 FPM DISCHARGE VELOCITY DURING ALL MODES OF OPERATION.

ENERGY RECOVERY UNIT SCHEDULE

TAG	MFR	MODEL NUMBER	SERVING	DESIGN AIRFLOW (CFM)	GLYCOL ENERGY RECOVERY COIL														ELECTRICAL DATA							WEIGHT (LBS)							
					EXHAUST AIR								COIL						SERVICE														
					SUMMER				WINTER				SUMMER			WINTER			WATER FLOW		WFO (FT WVC)		MCA (A)		MOP (A)		MCA (V)		MOP (PH)		MOP (HZ)		
					EAT (°F)	LAT (°F)	EAT (°F)	LAT (°F)	EWI (°F)	LWT (°F)	EWI (°F)	LWT (°F)	WATER (GPM)	WFO (GPM)	WFO (GPM)	WFO (GPM)	WFO (GPM)	WFO (GPM)	WFO (GPM)	WFO (GPM)	WFO (GPM)	WFO (GPM)	WFO (GPM)	WFO (GPM)	WFO (GPM)		WFO (GPM)	WFO (GPM)	WFO (GPM)	WFO (GPM)	WFO (GPM)	WFO (GPM)	
					WATER (GPM)	WFO (GPM)	WFO (GPM)	WFO (GPM)	WFO (GPM)	WFO (GPM)	WFO (GPM)	WFO (GPM)	WFO (GPM)	WFO (GPM)	WFO (GPM)	WFO (GPM)	WFO (GPM)	WFO (GPM)	WFO (GPM)	WFO (GPM)	WFO (GPM)	WFO (GPM)	WFO (GPM)	WFO (GPM)	WFO (GPM)		WFO (GPM)	WFO (GPM)	WFO (GPM)	WFO (GPM)	WFO (GPM)	WFO (GPM)	
ERU-1	M.K. PLASTICS	K-KORE	1ST FLOOR	50,000	75.0	62.5	87.6	66.7	70.0	52.8	35.5	35.3	90.7	79.2	28.4	53.3	158.7	71.9	2.0	15	120	1	60	30,000									
ERU-2	M.K. PLASTICS	K-KORE	2ND FLOOR	74,000	75.0	62.5	87.5	66.6	70.0	52.8	35.7	35.5	90.7	79.5	28.4	52.6	246.7	98.5	2.0	15	120	1	60	32,000									

GENERAL NOTES:

A. ELECTRICAL CONNECTION IS FOR LIGHTS INSIDE THE ERU. LIGHTS SHALL BE FACTORY INSTALLED AND WIRED TO LIGHT SWITCH ON EXTERIOR OF UNIT.

B. EXHAUST GLYCOL ENERGY RECOVERY COILS ARE TO BE FACTORY MOUNTED BY THE ENERGY RECOVERY UNIT MANUFACTURER AND PROVIDED BY THE HIGH PERFORMANCE ENERGY RECOVERY MANUFACTURER SHIPPED TO THE ENERGY RECOVERY UNIT MANUFACTURER. REFER TO HIGH PERFORMANCE ENERGY RECOVERY SYSTEM SPECIFICATION FOR ADDITIONAL DETAILS.

C. REFER TO DETAILS ON DRAWING MG.3.

HIGH EFFICIENCY ENERGY RECOVERY SYSTEM SCHEDULE

TAG	MFR	MODEL NUMBER	SERVING	PLATE HEAT EXCHANGER CAPACITY (BTUH)	HOT WATER TO GLYCOL HEAT EXCHANGER				ELECTRICAL DATA				
					WINTER		WATER FLOW RATE (GPM)	WPD (FT WC)	MCA (A)	MOP (A)	SERVICE		
					EWT (°F)	LWT (°F)					(V)	(PH)	(HZ)
HEERS-1	KONVEKTA	HYDRONIC MODULE	AHU'S & ERUS	3,978,260	140.0	106.0	236.0	2.3	81.3	100	480	3	60

GENERAL NOTES:

A. HYDRONIC MODULE SKID SHALL INCLUDE HOT WATER TO GLYCOL HEAT EXCHANGERS WITH MINIMUM TOTAL CAPACITY SCHEDULED. SKID SHALL INCLUDE FACTORY MOUNTED DUTY/STANDBY GLYCOL PUMPS SIZED FOR THE SYSTEM AND COIL PRESSURE DROPS. ALL PUMPS, CONTROLS, VALVES SHALL BE FACTORY MOUNTED AND WIRED ON THE SKID.

B. HYDRONIC ACCESSORIES SUCH AS AIR SEPARATOR, EXPANSION TANK, GLYCOL FEEDER, FILTER FEEDER, ETC. SHALL BE SIZED FOR THE SYSTEM AND PRE-PIPED ON THE HYDRONIC MODULE SKID.

C. REFER TO SECTION 237320 FOR ADDITIONAL DETAILS.

FAN SCHEDULE

TAG	MANUFACTURER	MODEL NUMBER	SERVING	TYPE	AIRFLOW (CFM)	ESP (IN WC)	FAN WHEEL (RPM)	DRIVE TYPE	SONES	CONTROL METHOD	MOTOR (HP)	BHP (HP)	ELECTRICAL DATA			WEIGHT (LBS)	NOTES
													(V)	(PH)	(HZ)		
F-1	GREENHECK	BSQ-240	REFRIGERANT EXHAUST	INLINE CENTRIFUGAL	5,050	0.50	630	BELT	12.2	BAS SPECIAL	1	0.78	480	3	60	400	1.2, 3

NOTES:

1. PROVIDE WITH UNIT MOUNTED DISCONNECT SWITCH.

2. PROVIDE WITH MOTOR OPERATED DAMPER TO INTERLOCK WITH FAN OPERATION.

3. PROVIDE WITH 2-SPEED MOTOR. INTERLOCK HIGH SPEED TO REFRIGERANT DETECTOR HIGH ALARM. INTERLOCK LOW-SPEED TO