

AIR COOLED SCREW CHILLER SCHEDULE

CHILLER TAG			CH-1 AND CH-2
LOCATION		MECHANICAL ROOM - ROOF	
MAX DIMENSIONS (OVERALL)	LENGTH X WIDTH (IN)		346 X 88
	HEIGHT (IN)		99
	OPERATING WEIGHT (LBS)		19,192
REFRIGERATION CAPACITY (TONS), EACH			275
COMPRESSORS	QUANTITY		2
	CAPACITY STEPS		-
	KW INPUT (TOTAL)		-
EVAPORATOR	TEMP. ENT °F		54
	TEMP. LVG °F		44
	GPM		649.7
	MAX PD - FT.		16.3
CONDENSER	FOULING FACTOR		0.0001
	AMBIENT AIR TEMP °F		95
	FANS PER MODULE	QUANTITY	12
		FAN MOTOR HP	-
		FAN MOTOR POWER PER FAN	-
	ELECTRICAL DATA (PER POWER SUPPLY)	QUANTITY (# OF POWER SUPPLIES)	
VOLTS/PH/Hz		460/3/60	
MCA (AMPS)		483.6	
MOCp (AMPS)		600	
REFRIGERANT DATA	REFRIGERANT TYPE		R-513A
	# OF CIRCUITS		2
	REFRIGERANT CHARGE EACH(LB)		293/310
	REFRIGERANT SAFETY CLASS		A1
DIMENSION OF CONDENSER STEEL DUNNAGE			SEE STRUCTURAL PLANS
A-WEIGHTED SOUND PRESSURE (DBA)			70
TOTAL SYSTEM, COOLING EFFICIENCY(KW/TON)			1.34
RATED EFFICIENCY, AHRI EER			9.989
IPLV (BTU/Wh)			18.80
IPLV (EER)			18.80
BASIS OF DESIGN	MANUFACTURER		CARRIER
	MODEL		30XV275M
	SERIAL		NA

REMARKS

1. PROVIDE OPERATIONS AND MAINTENANCE MANUALS. CONTRACTOR TO INSTALL UNIT PER MFG'S IOM MANUAL.
2. SHIP CHILLER PACKAGED PER EACH MODULE.
3. PROVIDE DIGITAL SCROLL LEAD COMPRESSOR.
4. PROVIDE VARIABLE SPEED DRIVE.
5. PROVIDE ISOLATION VALVES ON EVAPORATOR AND CONDENSER.
6. PROVIDE ENERGY MANAGEMENT MODULE AND BACNET CARD.
7. PROVIDE FINE MESH STRAINER ON EACH EVAPORATOR AND CONDENSER BRANCH LINE.
8. PROVIDE MICROPROCESSOR CONTROL FOR EACH CHILLER WITH BACNET BMS INTERFACE FOR MONITORING.
9. PROVIDE MINIMUM 3' CLEARANCE IN ALL DIRECTIONS FOR SERVICE.
10. PROVIDE DISCONNECT SWITCH INSTALLED BY FACTORY.

~~PIPE INSULATION SCHEDULE~~

FLUID	THICKNESS	OPERATING TEMP RANGE, °F
CHILLED WATER (LESS THAN 1-1/2")	0.5"	40-60
CHILLED WATER (1-1/2" AND GREATER)	1.0"	40-60
CONDENSER WATER (ALL SIZES)	NONE	60-105
MAKE-UP WATER (ALL SIZES)	0.5"	40-60
HWS&R (LESS THAN 1-1/2")	1.5"	141-200
HWS&R (1-1/2" AND GREATER)	2.0"	141-200
HTS&R(LESS THAN 1-1/2")	4.0"	251-350
HTS&R(1-1/2" AND GREATER)	4.5"	251-350
REFRIGERANT (LESS THAN 1-1/2")	1.0"	<40

PIPE SIZE SCHEDULE

PIPE SIZE	FLOW RANGE
3/4"	0-4 GPM
1"	5-7.5 GPM
1-1/4"	8-16 GPM
1-1/2"	17-24 GPM
2"	25-48 GPM
2-1/2"	49-77 GPM
3"	78-140 GPM
4"	141-280 GPM
5"	281-500 GPM
6"	501-800 GPM

MINIMUM PIPE SIZES SHALL BE PROVIDED AS SCHEDULED ABOVE, WHERE PIPE SIZES INDICATED ELSEWHERE WITHIN DRAWINGS CONFLICT WITH SCHEDULED FLOW, THE LARGER SIZE PIPE SHALL BE PROVIDED. MINIMUM PIPE SIZE 3/4".

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WATER PUMP SCHEDULE (SEE DRAWING M-301)

UNIT NUMBER		HWP-4, HWP-5	HWP-6, HWP-7	HWP-8, HWP-9, HWP-10, HWP-11	P-1, P-2,P-3 EXISTING	P-4, P-5, P-6 EXISTING	P-7, P-8	P-9, P-10
LOCATION		MECHANICAL RM	MECHANICAL RM	MECHANICAL RM	CHILLER RM	CHILLER RM	ANNEX GYM MEZZANINE	MECHANICAL RM
SYSTEM SERVICE		BOILER B-3, B-4	BOILER B-3, B-4	BOILER B-3, B-4 CIRCULATORS	CHILLED WATER LOOP	PRIMARY CHILLED WATER LOOP CH-1, CH-2	ROOFTOP UNITS RTU-3, RTU-4, RTU-5, RTU-6	IWH-1, IWH-2
TYPE		BASE MOUNTED END SUCTION	CLOSE COUPLED IN-LINE CENTRIFUGAL	CLOSE COUPLED IN-LINE CENTRIFUGAL	HORIZONTAL SPLIT CASE - DOUBLE SUCTION	HORIZONTAL SPLIT CASE - DOUBLE SUCTION	CLOSE COUPLED IN-LINE CENTRIFUGAL ECM	CLOSE COUPLED IN-LINE CENTRIFUGAL
PUMP DATA	IMPELLER DIA. (IN)	9.5	6	N/A	13.75	10.5	3.75	4.375
	SUCTION CONN. (IN)	2.5	1.5	N/A	6	6	2	1
	DISCHARGE CONN. (IN)	2	1.5	N/A	6	6	2	1
	CAPACITY (GPM)	150	35	150	463	850	49.2	27
	TOTAL HD (FT.)	70	35	20	190	80	10	10
	WORKING FLUID	WATER - 30% PG	WATER - 30% PG	WATER - 30% PG	WATER - 30% PG	WATER - 30% PG	WATER	WATER
MOTOR	FLUID TEMP °F	160	160	160	44	44	140	180
	TYPE	NEMA PREMIUM, VFD READY	NEMA	NEMA	EXISTING NEMA PREMIUM, VFD READY	EXISTING NEMA PREMIUM, VFD READY	NEMA	NEMA
	H.P.	7.5	1	3	40	25	0.25	0.25
	RATED R.P.M.	1800	1800	N/A	1750	1750	1800	1800
	DUTY POINT R.P.M.	1538	1681	2525	1628	1601	1653	1437
	ENCL. TYPE	ODP	ODP	ODP	ODP	ODP	ODP	ODP
	V/PH/Hz	460/3/60	460/3/60	460/3/60	460/3/60	460/3/60	460/1/60	460/3/60
	DUTY POINT BHP	3.56	0.534	1.19	32	21	0.174	0.119
DUTY POINT EFF. (%)		72.8	57.5	N/A	70.0	75	70.2	55.2
OPERATING WEIGHT (LB)		350	84	50	EXISTING	EXISTING	60	46
PUMP BASE DIMENSIONS (L x W) (IN)		35 x 15	NA - SUPPORTED FROM CEILING	NA - SUPPORTED FROM FLOOR	EXISTING	EXISTING	NA- SUPPORTED FROM CEILING	NA- SUPPORTED FROM CEILING
BASIS OF DESIGN	MANUFACTURER	BELL & GOSSETT	BELL & GOSSETT	BELL & GOSSETT	EXISTING	EXISTING	BELL & GOSSETT ECM	BELL & GOSSETT
	MODEL	e-1510-2BD-SS-213T	e-90 1.5AB	ECOCIRC XL 45-375	EXISTING	EXISTING	e-90 2AAC ECM	e-90E

REMARKS
1. PROVIDE OPERATIONS AND MAINTENANCE MANUALS.
2. PROVIDE NEW 6" TALL EQUIPMENT PAD, EXTEND 6" BEYOND EQUIPMENT BASE IN ALL DIRECTIONS.
3. PROVIDE VIBRATION ISOLATORS.
4. PROVIDE VFD FOR ALL UNITS WITH 5 MOTOR HP AND GREATER. PROVIDE MOTOR STARTER/DISCONNECT FOR ALL OTHER PUMPS.
5. ELECTRICAL MOTORS SHALL MEET THE MINIMUM EFFICIENCY REQUIREMENTS OF TABLES C405.8(1) THRU C405.8(4) WHEN TESTED AND RATED IN ACCORDANCE WITH THE DOE 10 CFR 431.
6. CHILLED WATER PUMPS P-4, P-5, AND P-6 TO BE REFURBISHED, NEW VFD COMPATIBLE MOTORS AND VFDs.

BOILER-BURNER UNIT SCHEDULE

UNIT NO		B-3, B-4
LOCATION		MECHANICAL ROOM
TYPE		CONDENSING
RATING	GROSS I.B.R. OUTPUT (BTU/HR)	1,419,000
	MIN OVERALL BOILER EFFICIENCY (%)	94.6
	NET I.B.R. OUTPUT (WATER) @ 100% (BTU/H)	NA
	TURNDOWN RATIO	20:1
DESIGN HOT WATER SUPPLY TEMPERATURE (°F)		180
DESIGN HOT WATER RETURN TEMPERATURE (°F)		160
SYSTEM DESIGN PRESSURE (PSI)		12
MAX ALLOWABLE OPERATING PRESSURE (PSIG)		160
FLUE OUTLET & AIR INTAKE SIZE (INCHES)		6
SUPPLY OUTLET SIZE (INCHES)		4
RETURN INLET SIZE (INCHES)		4
FUEL DATA	GAS CONNECTION, NPT (IN)	2
	GAS FIRING RATE (CFH)	1500
	INLET PRESSURE RANGE (IN. WC)	4.0 - 14
ELECTRICAL DATA	VOLTS/PH/Hz	120/1/60
	POWER, FLA	16
	OPERATING AMPS, MCA	-
OVERALL DIMENSIONS WITHOUT CONTROLS (L X W X H) (INCHES)		57.4 X 28 X 78
HOUSE KEEPING CONCRETE PAD DIMENSIONS (INCHES)		-
OPERATING WEIGHT (LBS)		1654
BASIS OF DESIGN	BOILER MANUFACTURER	AERCO
	BOILER MANUFACTURER & MODEL NO.	BENCHMARK 1500

REMARKS	
1.	PROVIDE OPERATIONS AND MAINTENANCE MANUALS, CONTRACTOR TO INSTALL UNIT PER MFGGR'S IOM MANUAL.
2.	SHIP HOLELER PACKAGED AND SHOULD FIT THROUGH STANDARD 3 FOOT DOOR WIDTH.
3.	VERIFY IN FIELD CONNECTION LOCATIONS AND CLEARANCES FOR BOILERS, REFER TO MANUFACTURER'S DOCUMENTS.
4.	PROVIDE CONTROL PANEL.
5.	NEW YORK STATE EDUCATION DEPARTMENT CONTROL COMPLIANCE, WIRING, AND OTHER EQUIPMENT AS NECESSARY TO SATISFY THE SEQUENCE OF OPERATION.
6.	VENTLESS GAS TRAIN
7.	BOILER SHALL UTILIZE NON-METALLIC VENT.
8.	CONTROLLER SHALL DISPLAY AN ALERT WHEN O2 LEVEL IS ABOVE OR BELOW CRITICAL VALUES.
9.	COMBUSTION O2 LEVELS SHALL NOT EXCEED 7% THROUGHOUT ENTIRE FIRING RANGE.
10.	BOILER MANUFACTURER TO PROVIDE AND CONTROL FIELD INSTALLED, MOTORIZED ISOLATION VALVES ON EACH BOILER.
11.	PROVIDE BOILER SEQUENCING WITH HW RESET.
12.	BOILER SHALL BE EQUIPPED WITH COMBUSTION AIR TEMPERATURU COMPENSATION TO AUTOMATICALLY COMPENSATE FOR AIR DENSITY CHANGES BY ADJUSTING OXYGEN AND OPTIMIZE THE COMBUSTION EFFICIENCY USER ALL SEASONAL TEMPERATURE CHANGES.
13.	BOILER STAGING POINT NOT TO EXCEED 40%
14.	BOILER MANUFACTURER TO PROVIDE 10 YEAR NON-PRORATED HEAT EXCHANGER WARRANTY.
15.	BOILER MANUFACTURER TO PROVIDE 2 YEAR NON-PRORATED CONTROLLER WARRANTY.
16.	BOILER MANUFACTURER TO PROVIDE LETTER OF GUARANTEE FOR AS BUILT FLUE AND COMBUSTION AIR INSTALLATION.
17.	PROVIDE CONDENSATE NEUTRALIZER FOR EACH BOILER AND COMMON FLOW DRAINS.

COMBUSTION AIR DAMPER SCHEDULE

MARK	SERVICE	SIZE (WxH, IN)	BASIS OF DESIGN
D-1	COMBUSTION AIR (WH-1)	36X36	RUSKIN CD50

EXPANSION TANK SCHEDULE

UNIT #	SERVICE	LOCATION	SYSTEM TEMP		INITIAL PRESS. IN TANK PSIG	MIN. VOLUME GAL	ACCEPT VOLUME GAL	PIPE SIZE TO TANK	WEIGHT (LBS)	BASIS OF DESIGN	
			MIN °F	MAX °F						MANUFACTURER	MODEL #
ET-1	CHILLED WATER	BOILER RM	40	90	5	80	80	1	928	BELL & GOSSETT	B-300
ET-2	HOT WATER	BOILER RM	140	190	12	50	34.56	1-1/2	651	BELL & GOSSETT	B-200

EXPANSION TANK SCHEDULE NOTES:

1. PROVIDE HORIZONTAL, ASME BLADDER EXPANSION TANK FULLY CHARGED TO MEET THE REQUIREMENTS OF THIS SCHEDULE.

WATER MAKE-UP UNIT

UNIT NO.		MU-1	MU-2
PUMP DATA	FLOW RATE (GPM)	5	5
	MAX. PRESSURE (PSIG)	60	60
	RPM	3600	3600
	HP	3/4	3/4
V/PH/Hz		115/1/60	115/1/60
TANK SIZE (GAL.)		55	55
UNIT DIMENSIONS (LxWxH)(IN)		30 x 30 x 60	30 x 30 x 60
UNIT WEIGHT (LBS)		600	600

REMARKS:

1. PROVIDE A PACKAGED MAKE-UP UNIT WHICH SHALL BE CAPABLE OF MAINTAINING THE SYSTEM FILL PRESSURE AT 30 PSIG. PROVIDE A POLYETHYLENE TANK WITH REMOVABLE LID, STRAINER, ISOLATION VALVES, PUMP WITH OPEN DRIP PROOF MOTOR, CHECK/BALANCING VALVE, EXPANSION TANK, DISCHARGE PRESSURE GAUGE, STEEL PIPING, LOW LEVEL CUT-OUT, AND CONTROL/ALARM PANEL WITH INDICATOR LIGHTS IN A NEMA 4 ENCLOSURE.
2. REFER TO DETAIL 7/M502 FOR PIPING AND INSTALLATION.
3. PROVIDE OPERATION AND MAINTENANCE MANUAL.
4. BASIS OF DESIGN: BELL & GOSSETT GMU-60.

AIR SEPARATOR SCHEDULE

UNIT #	SERVICE	LOCATION	TYPE	AIR SEPARATOR			OPERATING WEIGHT (LBS)	BASIS OF DESIGN	
				SIZE (IN)	FLOW (GPM)	PRESS. DROP (FT H2O)		MANUFACTURER	MODEL #
AS-1	CHILLED WATER	MECHANICAL RM	COALESCING AIR & DIRT	8	480	0.3	1083	BELL & GOSSETT	CRS-8F
AS-2	HOT WATER	MECHANICAL RM	COALESCING AIR & DIRT	8	480	0.3	1083	BELL & GOSSETT	CRS-8F

CHEMICAL SHOT FEEDER SCHEDULE

UNIT #	SERVICE	LOCATION	TYPE	SIZE (GAL)	MAX. PRES S. (PSIG)	WEIGHT (LBS)	BASIS OF DESIGN	
							MANUFACTURER	MODEL #
CF-1	CHILLED WATER	BOILER RM	VERTICAL BY-PASS	5	300	38	NEPTUNE	DBF-5HP
CF-2	HOT WATER	BOILER RM	VERTICAL BY-PASS	5	300	38	NEPTUNE	DBF-5HP

DOMESTIC INDIRECT WATER HEATER SCHEDULE

UNIT #	SERVICE	LOCATION	CAPACITY (GAL)	WATER TEMP RANGE		BASIS OF DESIGN	
				INLET °F	OUTLET °F	MANUFACTURER	MODEL #
IWH-1	HOT WATER	BOILER RM	200	40	140	AO SMITH	HWGV200ASW660
IWH-2	HOT WATER	BOILER RM	200	40	140	AO SMITH	HWGV200ASW660

INDIRECT WATER HEATER SCHEDULE NOTES:
1. PROVIDE 210 GALLON 2-PORT BUFFER TANK, ASME CODE SECTION VIII-MAX PRESSURE 125 PSIG, MAX FLOW RATE 55 GPM.

IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE

1	01/08/25	ISSUED FOR BID
No.	Date	Revisions

REG. EXP DATE: 10-31-26

Drawn by	A.W
Checked by	P.C
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Scale	AS NOTED
Date	12/06/23

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MECHANICAL
SCHEDULES - 1

Drawing No.

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