H:\DWG\VISN8\Orlando\Working\ORLANDO_M-0.2.dwg, Layout1, 11/16/2004 02:28:25 PM, jhernandez, XES 8830 Dsize 24x36.pc3, ARCH D (36.00 x 24.00 Inches), 1:1

CHILLER SCHEDULE

TAG		(E) CH-1	(E) CH-2	(N) CH-3	(E) CH-5
MANUFACTURER		TRANE	TRANE	TRANE	McQUAY
MODEL NO.		CVHE-0500	CVHE-0500	CVHE-0500	TC2352
TYPE		CENTRIFUGAL	CENTRIFUGAL	CENTRIFUGAL	CENTRIFUGAL
REFRIGERANT TYPE		R123	R123	R123	R134a
CAPACITY (TONS)		350	350	350	300
CHILLED WATER FLOW (GPM)		700	700	700	600
CHILLED WATER TEMP. IN (°F)		57	57	57.1	57
CHILLED WATER TEMP. OUT (°F)		45	45	45.1	45
CONDENSER WATER FLOW (GPM)		1050	1050	1050	900
CONDENSER WATER TEMP. IN (°F)		85	85	85.0	85
CONDENSER WATER TEMP. OUT (°F)		95	95	94.3	95
NO. OF PASSES	EVAPORATOR	2	2	2	2
	CONDENSER	2	2	2	2
FOULING FACTOR	EVAPORATOR	0.00025	0.00025	0.00010	X
	CONDENSER	0.00025	0.00025	0.00025	X
WATER PRESSURE DIFFERENTIAL (FT)	EVAPORATOR	12.01	12.01	10.49	14.0
	CONDENSER	14.41	14.41	13.08	24.0
KW / VOLTS / PHASE		189/460/3	189/460/3	189/460/3	244/460/3
REMARKS:					

NOTES: 1. WATER CHILLER SCHEDULE INFORMATION IS FOR EXISTING EQUIPMENT IS PROVIDED FOR TEST AND BALANCE PURPOSE ONLY. PROVIDE PRESSURE/EARLY WARNING REFRIGERANT ALARM TO MATCH EXISTING R-123 MACHINES. CONNECT TO EXITING ANNUNCIATOR.

2. CHILLER CH-3 PURCHASED BY SES AND INSTALLED BY MECHANICAL SUBCONTRACTOR.

AIR HANDLING UNIT SCHEDULE

		MARK	AHU-7	AHU-10	AHU-11
FAN		TOTAL AIR (CFM)	28700	14800	10750
FAN		OUTSIDE AIR (CFM)	8300	3270	4120
FAN		EXTERNAL STATIC PRESS. (IN W.G.)	2.3	3.2	3.46
FAN		TOTAL STATIC PRESSURE (IN WG.)	5.33	6.21	5.98
COOLING		COIL (CFM)	28700	14800	10750
COOLING		ENTERING AIR D.B./W.B. (°F)	83.8/70.5	81.6/67.0	84.4/69.6
COOLING		LEAVING AIR D.B./W.B. (°F)	54.4/54.3	55.0/53.9	54.8/54.0
COOLING		COIL SENSIBLE (MBTuH)	957	441	360
COOLING		COIL TOTAL (MBTuH)	1515	600	537.3
COOLING		COIL FLOW (GPM/PD – FEET WATER)	241.9/7.9	96.2/15.3	88.4/12.8
COOLING		EWT/TEMPERATURE RISE (°F)	45.0/12.5	45.0/12.4	45.0/12.1
COOLING		MAXIMUM COIL FACE VELOCITY (FPM)	489	499	441
HEATING		COIL (CFM)	28700	N/A	N/A
HEATING		ENTERING AIR D.B. (°F)	60	N/A	N/A
HEATING		LEAVING AIR D.B. (°F)	70.5	N/A	N/A
HEATING		COIL CAPACITY (MBTuH)	328	N/A	N/A
HEATING		COIL FLOW (GPM/PD – FEET WATER)	56.5/1.6	N/A	N/A
HEATING		EWT/TEMPERATURE DROP (°F)	100.0/11.7	N/A	N/A
HEATING		MAXIMUM COIL FACE VELOCITY (FPM)	488	N/A	N/A
FILTERS	PRE	FILTER (CFM)	28700	14800	10750
FILTERS	PRE	SEGMENT TYPE	PLEATED	PLEATED	PLEATED
FILTERS	PRE	PRE-FILTER MEDIA	2"- 30%	2"- 30%	2"- 30%
FILTERS	PRE	PRESSURE DROP (IN W.G.)	0.26	0.25	0.26
FILTERS	PRE	DIRTY FILTER ALLOWANCE (IN W.G.)	0.30	0.25	0.30
FILTERS	FINAL	FILTER (CFM)	28,700	14,800	10,750
FILTERS	FINAL	SEGMENT TYPE	RIGID (RF)	RIGID (RF)	RIGID (RF)
FILTERS	FINAL	FINAL-FILTER MEDIA	12"- 95%	12"- 85%	12"- 85%
FILTERS	FINAL	PRESSURE DROP (IN W.G.)	0.54	0.47	0.45
FILTERS	FINAL	DIRTY FILTER ALLOWANCE (IN W.G.)	0.75	0.75	0.75
		SYSTEM TYPE	N/A	N/A	N/A
		MAXIMUM FAN HORSEPOWER	40	25	20
		VOLTAGE/PHASE/HERTZ	460/3/60	460/3/60	460/3/60
		BASIS OF DESIGN	YORK	YORK	YORK
		MODEL NUMBER (SIZE)	AP-580 (44SWSI)	AP-305 (36SWSI)	AP-250 (30SWSI)
		NOTES		1	

REMARKS
1. AHU's PURCHASED BY SEMPRA ENERGY, RECEIVED, STORED & INSTALLED BY MECHANICAL SUBCONTRACTOR.
2. EXTERNAL STATIC PRESSURE INCLUDES: DUCTWORK, FILTER (OUTSIDE OF AHU HOUSING) AND AIR DEVICES.
3. N/A = NOT APPLICABLE

NOTES
1. EXTERNAL STATIC PRESSURE DOES NOT INCLUDE MIXING BOX (RA/OA) PRESSURE DROP.

PUMP SCHEDULE

PUMP NO.	SERVICE	TYPE	GPM	HEAD (F.T.)	RPM	NPSH	ELECTRICAL DATA MHP	VOLTS	PHASE
EXISTING PUMPS									
CHWP-1	CHW PRIMARY	VFD, END SUCTION	700	55	1750	10 ft. MAX.	15	460	3
CHWP-2	CHW PRIMARY	VFD, END SUCTION	700	55	1750	10 ft. MAX.	15	460	3
CHWP-3	CHW PRIMARY	VFD, END SUCTION	700	55	1750	10 ft. MAX.	15	460	3
PRV-1	CHW SECONDARY (CLINIC)	VFD, END SUCTION	1400	90	1750	10 ft. MAX.	40	460	3
PRV-2	CHW SECONDARY (CLINIC)	VFD, END SUCTION	1400	90	1750	10 ft. MAX.	40	460	3
PRV-5	CHW SECONDARY (NH)	VFD, END SUCTION	342	80	1750	10 ft. MAX.	15	480	3
PRV-6	CHW SECONDARY (NH)	VFD, END SUCTION	342	80	1750	10 ft. MAX.	15	480	3
NEW PUMPS									
CHWP-4	CHILLED WATER	VFD, END SUCTION	700	55	1750	10 ft. MAX.	15	460	3
CWP-1	CONDENSER WATER	VFD, END SUCTION	1050	95	1750	10 ft. MAX.	40	460	3
CWP-2	CONDENSER WATER	VFD, END SUCTION	1050	95	1750	10 ft. MAX.	40	460	3
CWP-3	CONDENSER WATER	VFD, END SUCTION	1050	95	1750	10 ft. MAX.	40	460	3
CWP-4	CONDENSER WATER	VFD, END SUCTION	1050	95	1750	10 ft. MAX.	40	460	3

NOTES: 1) PUMP SCHEDULE INFORMATION IS EXISTING UNLESS OTHERWISE NOTED, AND PROVIDED FOR TEST AND BALANCE PURPOSES ONLY.
2) BASIS OF DESIGN FOR (N) PUMPS IS BELL & GOSSETT.
3) NEW SUCTION DIFFUSER FOR CHWP-4, PURCHASED BY SES, INSTALLED BY MECHANICAL SUB-CONTRACTOR.

AIR FLOW MONITORING STATION SCHEDULE

MARK	AHU SYSTEM	DUCT SIZE	AIR DESIGNATION	CFM (MIN/MAX)	STATIC PRESS. DROP	LOCATION (REF: SHT.)	REMARKS
AFMS-1	AHU-7	56/14	SUPPLY	*/6560	*	M-9.0	X
AFMS-2	AHU-7	48/16	SUPPLY	*/6860	*	M-9.0	X
AFMS-3	AHU-8	22/14	SUPPLY	*/*	*	M-10.0	X
AFMS-4	AHU-8	*	SUPPLY	*/*	*	M-10.0	X
AFMS-5	AHU-8	18/18	SUPPLY	1760/1760	*	M-10.0	X
AFMS-6	AHU-9	18/18	SUPPLY	*/*	*	M-10.0	X
AFMS-7	AHU-9	18/18	SUPPLY	*/*	*	M-10.0	X
AFMS-8	AHU-9	*	SUPPLY	1860/1860	*	M-10.0	X
AFMS-9	AHU-9	18/12	SUPPLY	1120/1120	*	M-10.0	X

REMARKS:
1. PURCHASED BY EMCS SUBCONTRACTOR
2. INSTALLED BY MECHANICAL SUBCONTRACTOR
3. FIELD VERIFY DUCT SIZES.

AUTOMATIC DAMPER SCHEDULE

MARK	AHU SYSTEM	DUCT SIZE	AIR DESIGNATION	OPERATOR	LOCATION (REF: SHT.)	REMARKS
AD-1	AHU-7	38/18	S/A	ELECTRIC	M-8.0	1,2,3
AD-2	AHU-7	48/16	S/A		M-9.0	1,2,3
AD-3	AHU-7	26"ø	S/A		M-9.0	1,2,3
AD-4	AHU-8	24/22	S/A		M-8.0	1,2,3
AD-5	AHU-8	18/18	S/A		M-8.0	1,2,3
AD-6	AHU-7	48/20	R/A	PNEUMATIC	M-8.0	2,3,4
AD-7	AHU-10	30/20	O/A	PNEUMATIC	M-8.0	2,4
AD-9	AHU-9	34/20	S/A	ELECTRIC	M-10.0	1,2,3
AD-10	AHU-9	18/18	S/A		M-10.0	1,2,3
AD-11	AHU-9	18/18	S/A		M-10.0	1,2,3
AD-12	AHU-9	22/22	S/A		M-10.0	1,2,3

REMARKS:
1. PURCHASED BY EMCS SUBCONTRACTOR
2. INSTALLED BY MECHANICAL SUBCONTRACTOR
3. FIELD VERIFY DUCT SIZES.
4. SMOKE DAMPER AND IS PURCHASED BY MECHANICAL SUBCONTRACTOR.

SEQUENCE OF INSTALLATION

A) SUBMIT TO THE CONTRACTOR FOR APPROVAL A DETAILED SEQUENCE OF INSTALLATION. THE SEQUENCE OF INSTALLATON MUST BE SUBMITTED A MINIMUM OF 30 CALENDAR DAYS BEFORE THE START OF ANY WORK. THE DETAILED SEQUENCE OF INSTALLATION SHALL INCLUDE THE REQUIRED WORKING AND SHOP DRAWINGS OF THE EQUIPMENT, ELECTRICAL EQUIPMENT, FEEDERS, AND PIPING SYSTEMS. NOTIFY THE CONTRACTOR IN WRITING A MINIMUM OF 10 WORKING DAYS BEFORE DISRUPTION OF ANY SERVICE. THE CONTRACTOR WITH INPUT FROM V.A. CONTRACTING OFFICER RESERVES THE RIGHT TO POSTPONE OR CANCEL ANY SCHEDULED COMPONENT AT ANY TIME.

B) ALL PERSONNEL, EQUIPMENT, AND MATERIALS REQUIRED FOR ANY PHASE OF THE SEQUENCE OF INSTALLATION INVOLVING AN INTERRUPTION OF SERVICE SHALL BE ON SITE BEFORE THE START OF THE INTERRUPTION. THE SUBCONTRACTOR SHALL INSURE THAT ALL SUBORDINATE SUBCONTRACTORS ARE PRESENT AND IN PLACE BEFORE THE START OF ANY PHASE.

C) PROVIDE A SEPARATE SEQUENCE OF INSTALLATION FOR EACH OF THE FOLLOWING:

1) BUILDING 502 (BOILER/GENERATON BLDG.) WORK

PHASE 1

PHASE 1 WORK SHALL CONSIST OF THE INSTALLATION OF WATER CHILLER, PUMPS, PIPING, CONTROLS, AND APPURTENANCES AS INDICATED TO THE FULLEST EXTENT POSSIBLE WITHOUT DISRUPTION TO THE EXISTING AIR CONDITIONING SYSTEM. THE CHILLER, PUMPS, AND PIPING SYSTEMS SHALL BE THOROUGHLY FLUSHED AND CHEMICALLY TREATED TO REMOVE ALL RESIDUE, DEBRIS, AND SCALE. THE MAIN SYSTEM PUMPS SHALL NOT BE USED FOR FLUSHING. THE NEW PIPING AND EQUIPMENT SHALL BE PRESSURE TESTED BEFORE INSTALLING THE INSULATION. AFTER A SUCCESSFUL PRESSURE TEST, INSTALL THE SPECIFIED INSTALLATION COMPLETELY EXCEPT THE FINAL CONNECTIONS TO THE EXISTING SYSTEMS.

PHASE 2

a) REMOVE THE (E)CONDENSER WATER PUMP AND REPLACE THE SPECIFIED UNITS ON AN INDIVIDUAL BASIS. ONLY ONE PUMP AT A TIME MAY BE TAKEN OUT OF SERVICE. A (N)PUMP MUST BE OPERATIONAL FOR A MINIMUM OF 3 CONTINUOS DAYS BEFORE THE NEXT PUMP IS REPLACED.

PHASE 3

DURING A WEEKEND AT AN APPROVED TIME, PERFORM THE FOLLOWING WORK:

a) MAKE FINAL PIPING AND ELECTRICAL CONNECTIONS FOR THE NEW CHILLER AND PUMPS. THE PIPING CONNECTIONS BETWEEN THE NEW PIPING, EXISTING VALVES, AND CAPPED CONNECTIONS SHALL BE VISUALLY INSPECTED FOR LEAKS. THE CONNECTIONS SHALL BE IMMEDIATELY INSULATED AFTER APPROVAL BY CONTRACTOR.

b) THE NEW CHILLER SHALL BE ENERGIZED AND THE EQUIPMENT MANUFACTURER REPRESENTATIVE SHALL PERFORM A CERTIFIED START-UP SEQUENCE.

c) THE CONTROL SYSTEM SHALL BE CONNECTED AND NEW PROGRAMMING INSTALLED.

d) THE CENTRAL ENERGY PLANT SHALL BE REENERGIZED.

PHASE 4

THE ENTIRE CENTRAL CHILLED AND CONDENSER WATER SYSTEM SHALL BE TESTED AND BALANCED AS INDICATED.

2) AHU REPLACEMENT WORK:

a) MECHANICAL SUBCONTRACTOR SHALL PROVIDE SHEET METAL DUCT DRAWINGS AS PART OF SEQUENCE OF INSTALLATION.

b) SEE DRAWINGS M-7.0 & M-8.0 FOR DEMOLITION AND RESTORATION ALONG WITH AHU GENERAL PHASING NOTES. AHU-7 HAS PRIORITY IN START-UP OVER AHU's 10 & 11.

TESTING & BALANCE CRITERIA

A) ALL NEW CHILLERS, CONDENSER AND PRIMARY CHILLED WATER PUMPS SHALL BE TESTED AND BALANCED. THE EXISTING CHILLERS AND PUMPS SHALL BE TESTED AND BALANCED AS INDICATED FOR NEW EQUIPMENT.

B) THE CHILLED WATER SYSTEM SHALL BE BALANCED WITH ALL COMBINATIONS OF THE THREE 350-TON AND ONE 300-TON CHILLERS AND PRIMARY PUMPS OPERATING. THE CHILLER PLANT SHALL BE OPERATED AND BALANCED WITH ALL COMBINATIONS IF THREE CHILLERS AND PUMPS OPERATING. AT NO TIME ARE ALL FOUR CHILLERS TO BE ENERGIZED.

C) THE TEST AND BALANCE PROCEDURE SHALL BE COORDINATED WITH NORMAL OPERATION OF THE FACILITY. TEST AN BALANCE MAY HAVE TO BE PERFORMED AT NIGHTS AND WEEKENDS AS REQUIRED FOR PART LOAD OPERATION OF THE CHILLER PLANT. THE AIR CONDITIONING SERVICE TO THE FACILITY MAY NOT BE INTERRUPTED FOR TEST AND BALANCE.

D) THE INDICATED FLOW RATES ARE MINIMUM VALUES AND THE MAXIMUM FLOW RATES SHALL BE AT 115% WITH ANY COMBINATION OF PUMPS AND MACHINES OPERATING. THE SECONDARY CHILLED WATER FLOW RATES, PUMP PRESSURES, AND VFD FREQUENCIES SHALL BE NOTED AT THE SAME TIME THE OTHER EQUIPMENT VALUES ARE RECORDED.

INLET GUIDE VANE MODIFICATIONS

1) MECHANICAL SUBCONTRACTOR TO SET AND LOCK INLET GUIDE VANES IN THE FULL OPEN POSITION ON THE SUPPLY AIR FANS OF THE FOLLOWING AHU's:

UNIT	LOCATION
AHU-1	LOW BAY ROOF
AHU-2	LOW BAY ROOF
AHU-3	LOW BAY ROOF
AHU-4	LOW BAY ROOF
AHU-5	LOW BAY ROOF
AHU-6	M-DECK
AHU-8	M-DECK
AHU-9	M-DECK

2) MECHANICAL SUBCONTRACTOR MUST COORDINATE THIS MODIFICATION WITH THE EMCS SUBCONTRACTOR.

RECORD DRAWINGS
PREPARED BY: J. Hernandez
Sempra Energy Services
11/16/04

THE SCALE SHOWN ON THIS DRAWING IS ADEQUATE ON A 36" x 24" SIZE SHEET ONLY. USE GRAPHIC SCALE FOR ANY OTHER SHEET SIZE.

Sempra Energy™
Services
HOUSTON, TX. (713) 361-7600

This print is the property of Sempra Energy Services Company. It Must Not Be Traced Nor Reproduced in Any Manner, Nor Shall It Be Submitted To Outside Parties For Examination Without Our Consent. It Shall Be Used Only As A Means Of Reference For Work Designed Or Furnished By Us.
Sempra Energy Services is not the same company as the utility, SDGE or SoCalGas, and Sempra Energy Services is not regulated by the California Public Utilities Commission.

VISN8 - VAHC ORLANDO
ORLANDO FLORIDA
MOD 6 ENERGY CONSERVATION PROJECT

SEAL:

ISSUE	DATE:
95% REVIEW	09/20/02
ISSUED FOR BIDS	12/02/03
ISSUED FOR CONSTRUCTION	01/30/04

REVISION — DATE:

PROJECT No.: 5218
DESIGNED BY: C.CANE
DRAWN BY: M.NOWLING
CHECKED BY: ______ DATE: ______
APPROVED BY: ______ DATE: ______
DRAWING TITLE: SCHEDULES
SCALE: As Noted
DRAWING NO.: M-0.2