

ABBREVIATIONS

A/E	ARCHITECT / ENGINEER	CM	CARBON MONOXIDE	FFM	FEET PER MINUTE	NA	NOT APPLICABLE	UC	UNDER CUT
AHX	AIR TO AIR HEAT EXCHANGER	CM	CUBIC METER	FFS	FEET PER SECOND	NC	NOISE CRITERIA	UC	UNIT COOLER
AB	AIR BLENDER	CM/S	CUBIC METER PER SECOND	FRP	FIBER REINFORCED POLYESTER	NC	NORMALLY CLOSED	UH	UNIT HEATER
AAV	AUTOMATIC AIR VENT	CO	CLEAN OUT	FS	FLOW SWITCH	NG	NATURAL GAS	UL	UNDERWRITERS LABORATORY
ACC	AIR COOLED CONDENSER	CO2	CARBON DIOXIDE	FSSTAT	FREEZESTAT	NGFM	NATURAL GAS FLOWMETER	URV	UPBLAST UNIT VENTILATOR
ACCH	AIR COOLED CHILLER	COMP	COMPRESSOR UNIT	FT	FEET	NO	NORMALLY OPEN	V	VALVE
ACCU	AIR-COOLED CONDENSING UNIT	COP	COEFFICIENT OF PERFORMANCE	FT-LB	FOOT-POUND	NOA	NATIONAL OCEANIC & ATMOSPHERIC ADMINISTRATION	VAF	VANE-AXIAL FAN
ACU	AIR CONDITIONING UNIT	CP	CONDENSATE PUMP	GA	GAUGE	NOAA	NATIONAL OCEANIC & ATMOSPHERIC ADMINISTRATION	VAV	VARIABLE AIR VOLUME
ACD	AUTOMATIC CONTROL DAMPER, MODULATING	CR	CEILING REGISTER	GAL	GALLONS	NOM	NOMINAL	VDF	VARIABLE FREQUENCY DRIVE
ACD-TP	AUTOMATIC CONTROL DAMPER, TWO POSITION	CS	CONDENSATE STORAGE TANK	GAL	GALLONS	NPSH	NET POSITIVE SUCTION HEAD	VD	VOLUME DAMPER (MANUAL OPPOSED BLADE)
AD	ACCESS DOOR	CSG	CLEAN STEAM GENERATOR	GH	GRAVITY HOOD	NTS	NOT TO SCALE	VFD	VARIABLE FREQUENCY DRIVE
AF	AFTER FILTER	CT	COOLING TOWER	GPD	GALLONS PER DAY	SA	SUPPLY AIR	VHA	VETERANS HEALTH ADMINISTRATION
AFCV	AIR FLOW CONTROL VALVE	CU	CONDENSING UNIT	GPH	GALLONS PER HOUR	SAD	SOUND ATTENUATING DEVICE	VI	VIBRATION ISOLATOR
AFF	ABOVE FINISHED FLOOR	CUH	CABINET UNIT HEATER	GPM	GALLONS PER MINUTE	SAT	SUPPLY AIR TEMPERATURE	VV	VARIABLE INLET VANES
AFMD	AIR FLOW MEASURING DEVICE	CV	CONSTANT VOLUME	GPR	GAS PRESSURE REGULATOR	SC	SHADING COEFFICIENT	VP	VACUUM PUMP
AFW	AIR FOIL WHEEL (FAN)	CW	COLD WATER (POTABLE)	GS	GALVANIZED STEEL	SCF	STANDARD CUBIC FEET PER MINUTE	VPS	VARIABLE PRIMARY SYSTEM
AHU	AIR-HANDLING UNIT	CWCC	CHILLED WATER COOLING COIL	L	LITER	SCFM	STANDARD CUBIC FEET PER MINUTE	VR	VACUUM (STEAM CONDENSATE) RETURN
AMP	AMPERAGE	CWP	CONDENSER WATER PUMP	L/h	LITERS PER HOUR (OR LITERS/HOUR)	SCI	SPINAL CODE INJURY	VSD	VARIABLE SPEED DRIVE
AP	ACCESS PANEL	CWS	CONDENSER WATER SUPPLY (FROM COOLING TOWER)	L/m	LITERS PER MINUTE (OR LITERS/MINUTE)	SCR	SILICON CONTROLLED RECTIFIER	VUH	VERTICAL UNIT HEATER
APD	AIR PRESSURE DROP	CWS	CONDENSER WATER SUPPLY (FROM COOLING TOWER)	L/s	LITERS PER SECOND (OR LITERS/SECOND)	SD	SUPPLY AIR DIFFUSER		
ARI	AIR CONDITIONING AND REFRIGERATION INSTITUTE			LAT	LEAVING AIR TEMPERATURE	SD-1	SCHEMATIC DESIGN (SUBMISSION1)		
AS	AIR SEPARATOR			LBS/HR	POUNDS PER HOUR	SD-2	SCHEMATIC DESIGN (SUBMISSION2)		
ASME	AMERICAN SOCIETY OF MECHANICAL ENGINEERS	EA	EXHAUST AIR	LF	LINEAR FOOT (FEET)	SDPR	SMOKE DAMPER		
AW	AIR WASHER	EAT	ENTERING AIR TEMPERATURE	LG	LEAVING GYCOL TEMPERATURE	SDR	SMOKE DAMPER (RETURN)		
AXF	AXIAL FLOW	EC	EVAPORATIVE COOLER	LGT	LEAVING GYCOL TEMPERATURE	SDS	SMOKE DAMPER (SUPPLY)		
		ECC	ENGINEERING CONTROL CENTER	LH	LATENT HEAT	SDS	SENSIBLE HEAT		
		ECU	EVAPORATIVE CONDENSER UNIT	LPH	LIQUID PROPANE GAS	SEN	SUPPLY FAN		
		EDH	ELECTRIC DUCT HEATER	LPG	LOW PRESSURE RETURN (STEAM CONDENSATE)	SG	SUPPLY AIR GRILLE		
		EER	ENERGY EFFICIENCY RATIO	LPR	LOW PRESSURE STEAM RETURN (CLEAN)	SH	STEAM HUMIDIFIER		
		EF	EXHAUST FAN	LPRC	LOW PRESSURE STEAM RETURN (CLEAN)	SHC	STEAM HEATING COIL		
		EG	EXHAUST GRILLE	LPSC	LOW PRESSURE STEAM (CLEAN)	SI	SQUARE INCHES		
		EGS	EMERGENCY GAS SHUTOFF	LPS	LOW PRESSURE STEAM	SP	STATIC PRESSURE		
		EGT	ENTERING GYCOL TEMPERATURE	LPHX	LIQUID TO LIQUID HEAT EXCHANGER	SP GR	SPECIFIC GRAVITY		
		EH	EXHAUST HOOD	LPS	LOW PRESSURE STEAM	SPD	SUPPLY PROCESS AND DISTRIBUTION		
		EJ	EXPANSION JOINT	LPSC	LOW PRESSURE STEAM (CLEAN)	SPRV	STEAM PRESSURE REDUCING VALVE		
		EMD	END OF MAIN DRIP (STEAM)	LS	LINEAR SLOT DIFFUSER	SPS	STATIC PRESSURE SENSOR		
		ENT	ENTERING	LTC	LOCAL TEMPERATURE CONTROL PANEL	SR	SQUARE FOOT (FEET)		
		EOL	END OF LIFE	LTV	LEAVING	SR	SUPPLY AIR REGISTER		
		EOL	END OF LIFE	LVR	LOUVER	SS	STAINLESS STEEL		
		ER	EXHAUST REGISTER	LWT	LEAVING WATER TEMPERATURE	SSHX	STEAM TO STEAM HEAT EXCHANGER		
		ERC	ELECTRIC REHEAT COIL	M	METER, SI UNIT	SSR	SOLID SEPARATOR		
		ERP	ELECTRIC RADIANT PANEL	M/s	METERS PER SECOND (OR METERS/SECOND)	ST	STEAM TRAP		
		ESP	EXTERNAL STATIC PRESSURE	MA	MIXED AIR	SUH	STEAM UNIT HEATER		
		ET	EXPANSION TANK	MAT	MIXED AIR TEMPERATURE	SVS	STEAM PRESSURE REDUCING VALVE		
		ETO	ETHYLENE OXIDE	MAU	MAKE-UP AIR UNIT	SWX	STEAM TO WATER HEAT EXCHANGER		
		EUH	ELECTRIC UNIT HEATER	MAV	MANUAL AIR VENT				
		EWC	EVAPORATIVE WATER COOLER	MAX	MAXIMUM				
		EWT	ENTERING WATER TEMPERATURE	MB	MIXING BOX				
		EX	EXISTING	MBH	1000 BTUH				
				MCA	MINIMUM BRANCH CIRCUIT AMPACITY				
				MER	MECHANICAL EQUIPMENT ROOM				
				MERV	MINIMUM EFFICIENCY REPORTING VALVE				
				MH	MANHOLE				
				MHP	MOTOR HORSEPOWER				
				MN	MINIMUM				
				MM	MILLIMETER				
				MOV	MOTOR OPERATED VALVE				
				MPR	MEDIUM PRESSURE RETURN (STEAM CONDENSATE)				
				MPS	MEDIUM PRESSURE STEAM				
				MRI	MAGNETIC RESONANCE IMAGING				
				MTD	MEAN TEMPERATURE DIFFERENCE				
				MVD	MANUAL VOLUME DAMPER				
				MZ	MULTI-ZONE				
						T & PCV	TEMPERATURE AND PRESSURE CONTROL VALVE		
						TAB	TESTING, ADJUSTING, BALANCE		
						TD	TEMPERATURE DIFFERENCE		
						TDH	TOTAL DYNAMIC HEAD		
						TDS	TOTAL DISSOLVED SOLIDS		
						TC	TRANSFER GRILLE		
						TP	TRAP		
						TR	TOP REGISTER		
						TSP	TOTAL STATIC PRESSURE		
						TSTAT	THERMOSTAT		
						TU	TERMINAL UNIT		
						TWU	THRU-WALL UNIT		

SYMBOLS

	GLOBE VALVE		DIRECTION OF FLOW
	BALL VALVE		PIPE AND CALLOUT (SEE ABBREVIATIONS)
	GATE VALVE		SAFETY PRESSURE RELIEF VALVE
	BALANCING VALVE		PIPE END CAP
	BUTTERFLY VALVE		PRESSURE GAUGE WITH SHUTOFF VALVE
	SWING CHECK VALVE		PRESSURE REDUCING VALVE
	MOTORIZED 2-WAY CONTROL VALVE		TEMPERATURE INDICATOR WITH SHUTOFF VALVE
	MOTORIZED 3-WAY CONTROL VALVE		DRAIN
	MOTORIZED 2-WAY BUTTERFLY CONTROL VALVE		VORTEX FLOW METER
	FLOW SENSOR		EQUIPMENT CALL OUT
	FLOW SENSOR - ORIFICE PLATE		END SUCTION, CENTRIFUGAL PUMP
	TEMPERATURE SENSOR		IN-LINE PUMP
	PETE'S PLUG		REDUCER
	FLEXIBLE PIPE CONNECTION		MANUAL AIR VENT WITH 3/8" BLEED COCK
	VCTAULIC FITTINGS		AUTOMATIC AIR VENT
	PIPE UNION		STRAINER
	HOSEBIB		MOTOR
	POINT OF CONNECTION		VARIABLE FREQUENCY DRIVE
	POINT OF DISCONNECTION		MOTOR STARTER
	PIPE CONTINUATION		PROGRAMMABLE LOGIC CONTROLLER
	PIPE DOWN		CONTROL WIRING
	PIPE UP		AIR SEPARATOR
	PIPE RISE OR DROP		
	PIPE BRANCH OFF FROM TOP		
	PIPE BRANCH OFF FROM BOTTOM		
	PIPE BRANCH OFF FROM SIDE		

CONTROL VALVE SCHEDULE

SYMBOL	SERVICE / LOCATION	MAKE & MODEL NO.	TYPE	FLOW RATE (GPM)	Cv RATING	PRESS. DROP (PSI)	CLOSE OFF PRESS. (PSI)	VALVE SIZE (IN)	PIPE SIZE (IN)	BODY MATL.	INNER MATL.	BODY TYPE	CONTROL INPUT	SPRING RETURN (Y/N)	FAIL POSITION	REMARKS
CV-1	HIGH GRADE WATER FROM FUEL CELL	BELLIMO / B351+ARX24-MFT	3-WAY MIXING	150	67	5	100	2.00	3	CAST IRON	STAINLESS STEEL	GLOBE	2-10 VDC	Y	FC A-AB	
CV-2	DOMESTIC HOT WATER	BELLIMO / B348+ARX24-MFT	3-WAY MIXING	75	33	5	47	2.00	2 1/2	BRONZE	STAINLESS STEEL	GLOBE	2-10 VDC	Y	FC A-AB	
CV-3	ABSORPTION CHILLER	SIEMENS / VXF31.50	3-WAY MIXING	64	31	3.1	43.5	2.00	2 1/2	CAST IRON	STAINLESS STEEL	GLOBE	24 VAC	Y	FC A-AB	FURNISHED BY UTC POWER, INSTALLED BY CONTRACTOR

EXPANSION TANK SCHEDULE

SYMBOL	SERVICE / LOCATION	MAKE & MODEL NO.	TYPE	CHARGE PRESS. (PSI)	TANK VOLUME (GAL)	ACCEPT. VOLUME (GAL)	MAX. OPER. TEMP (°F)	MAX. OPER. PRESS. (PSIG)	DIAM. (IN)	HEIGHT (IN)	CONN. SIZE (IN)	WEIGHT (LBS)	REMARKS
ET-1	HHW / EQUIPMENT ROOM 1D-01	WESSELS CO. / N-90	DIAPHRAGM PRE-CHARGED, ASME	12	13.2	8.2	240	150	15.0	21.1	1/2	23	
ET-2	DHW / EQUIPMENT ROOM 1D-01	WESSELS CO. / N-30	DIAPHRAGM PRE-CHARGED, ASME	12	4.8	3	240	150	10.6	13.7	1/2	9	

AIR/DIRT SEPARATOR SCHEDULE

SYMBOL	SERVICE / LOCATION	MAKE & MODEL NO.	TYPE	FLOW RATE (GPM)	VOLUME (GAL)	CONN. SIZE (IN)	PRESS. DROP (FT)	DIMENSIONS (H x DIA.) (IN)	SHIP WT. (LBS)	REMARKS
AS-1	HEATING HOT WATER / LOT B	SPIROVENT / VDN 500	DRAIN MODEL	225	19.8	5	1.1	41.7 X 12.8	325	
AS-2	LOW GRADE HEAT/ MECHANICAL ROOM	SPIROVENT / VDN 300	DRAIN MODEL	75	6.6	3	.85	31.4 X 8.6	202	



CBS TELEVISION CITY FUEL CELL INSTALLATION PROJECT

MECHANICAL SYMBOLS & ABBREVIATIONS AND EQUIPMENT SCHEDULES

ID	DATE	REMARKS
1	17/02/02	PRELIMINARY DESIGN REVIEW
2	18/20/02	PLAN CHECK
3	19/04/02	BD CLARIFICATIONS
4	19/09/02	UTC RECOMMENDED CORRECTIONS
5	19/25/02	UTC COMMENTS/REVISIONS

ENGR. BY:	WTB
DRWN BY:	KAP
CHK'D BY:	WTB
DATE:	9/19/12
JOB NO.:	12-010
SCALE:	AS NOTED



SHEET M0.2