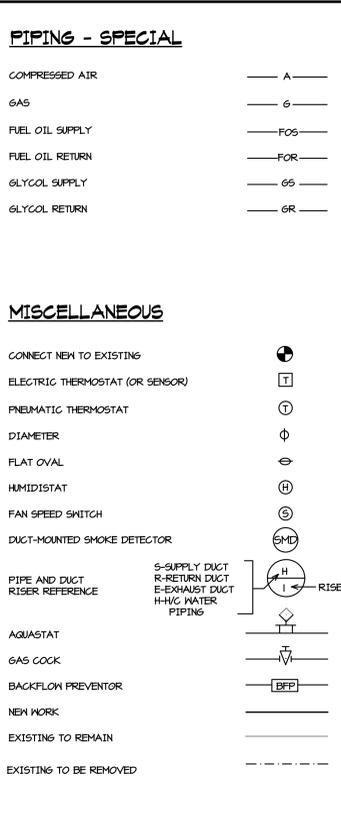
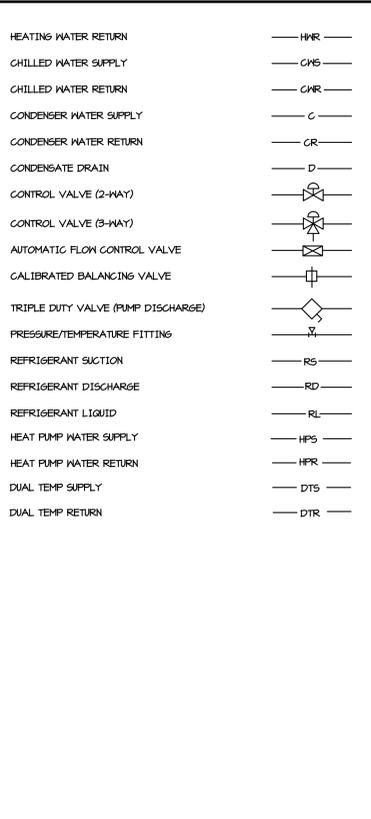
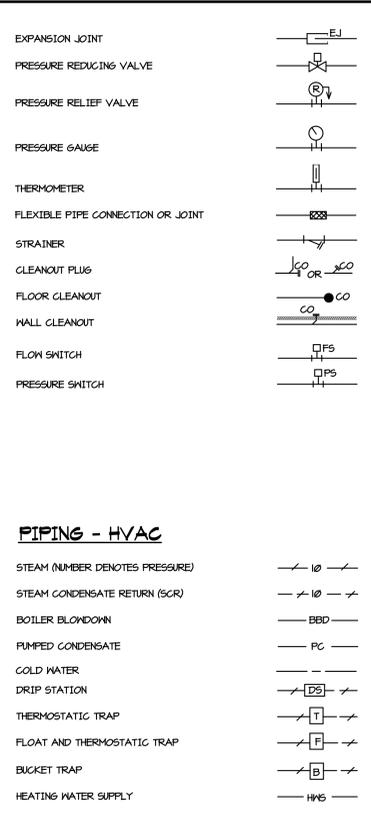
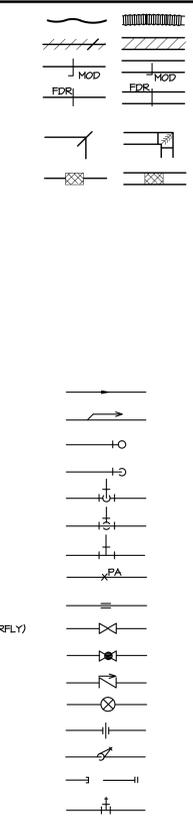
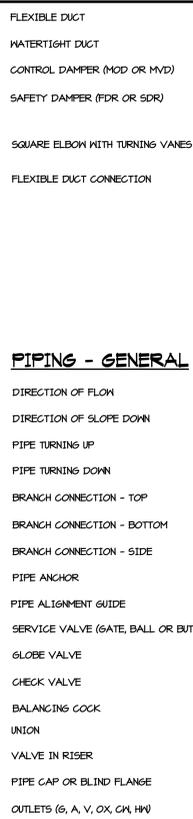
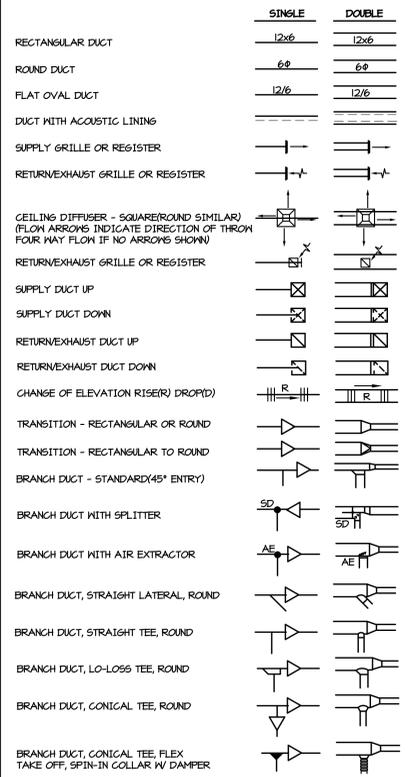


DUCTWORK, AIR DISTRIBUTION



ABBREVIATIONS

AAV	AUTOMATIC AIR VENT	MAV	MANUAL AIR VENT
AD	ACCESS DOOR	MBH	BTU PER HOUR (THOUSANDS)
AE	AIR EXTRACTOR	MOD	MOTOR OPERATED DAMPER
AFCV	AUTOMATIC FLOW CONTROL VALVE	MPR	MEDIUM PRESSURE STEAM RETURN
APD	AIR PRESSURE DROP, IN. WG.	MPS	MEDIUM PRESSURE STEAM SUPPLY
AQ	AQUASTAT	MVD	MANUAL VOLUME DAMPER
ATD	AIR TRANSFER DUCT	NC	NOISE CRITERIA
B6	BOTTOM GRILLE	OED	OPEN END DUCT
BHP	BRAKE HORSEPOWER	OFD	OVERFLOW DRAIN
BOD	BOTTOM OF DUCT	OA	OUTSIDE AIR
BR	BOTTOM REGISTER	OBD	OPPOSED BLADE DAMPER
BTU	BRITISH THERMAL UNIT/HOUR	OT	OVERSIDE TOWER
CAD	CEILING ACCESS DOOR	OTCP	OPEN TO CEILING FLENUM
CD	CEILING DIFFUSER/CONDENSATE DRAIN		
CFM	CUBIC FEET PER MINUTE	PV	POST INDICATOR VALVE
CG	CEILING GRILLE	FRV	PRESSURE REDUCING VALVE
CO	CLEANOUT	PSI	POUNDS PER SQUARE INCH
CR	CEILING REGISTER	RA	RETURN AIR
CRD	CEILING RADIATION DAMPER	RC	RAIN CONDUCTOR
CH	COLD WATER	RD	ROOF DRAIN
CHR	CHILLED WATER RETURN	RH	RELATIVE HUMIDITY
CWS	CHILLED WATER SUPPLY	RPM	REVOLUTIONS PER MINUTE
DAD	DUCT ACCESS DOOR	SA	SUPPLY AIR
DB	DRY BULB °F, °C/DECIBEL	SD	SHOWER DRAIN, SPLITTER DAMPER, STORM DRAIN
DG	DOOR GRILLE	SDR	SMOKE DAMPER
DND	DOUBLE WALLED DUCT	SND	SMOKE DETECTOR
EA	EXHAUST AIR	SMD	STATIC PRESSURE
EAT	ENTERING AIR TEMPERATURE	SS	SANITARY SEWER
ESA	EQUIPMENT SERVICE AREA	SS	STAINLESS STEEL
EWT	ENTERING WATER TEMPERATURE	SV	SERVICE VALVE
FD	FLOOR DRAIN	SN	SKITCH
FDR	FIRE DAMPER	TC	TIME CLOCK
FG	FLOOR GRILLE	TEMP	TEMPERATURE
FR	FRESH AIR	TD	TEMPERATURE DIFFERENTIAL
FRD	FIRE/SMOKE DAMPER	TG	TOP GRILLE/TRANSFER GRILLE
GAL	GALLON	TR	TOP REGISTER, TONS OF REFRIGERATION
GPD	GALLONS PER DAY	TSTAT	THERMOSTAT
GPH	GALLONS PER HOUR	UC	DOOR UNDERCUT
GPM	GALLONS PER MINUTE	V	VOLT, VERT
HP	HORSEPOWER	VAC	VACUUM
HPS	HIGH PRESSURE STEAM RETURN	VAV	VARIABLE AIR VOLUME
HW	HOT WATER	VTR	VENT THROUGH ROOF
HWR	HEATING/HOT WATER RETURN	W	WASTE, WATTS
HWS	HEATING WATER SUPPLY	WB	WATER GAUGE (FEET OR INCHES)
HZ	FREQUENCY (CYCLES/SECOND)	WH	WALL HYDRANT
KB	KILOWATT	WHA	WATER HAMMER ARRESTOR
KWH	KILOWATT HOUR	WPD	WATER PRESSURE DROP, FT. WG.
LAT	LEAVING AIR TEMPERATURE	WS	WATER STOP
LBHR	POUNDS PER HOUR	WTD	WATER TEMPERATURE DROP, °F
LD	LINEAR DIFFUSER	WVM	WATER TEMPERATURE RISE, °F
LS	LINEAR GRILLE	Z	ZONE
LR	LINEAR RETURN		
LMT	LEAVING WATER TEMPERATURE		

HVAC LEGEND

AIR HANDLING UNITS :

MARK	AHU-1	AHU-2
SUPPLY FAN		
TOTAL AIR, CFM	1750	1960
OUTSIDE AIR, CFM (4)	850	950
EXT. STATIC PRESS., IN. WG.	1.4	1.4
MAXIMUM HORSEPOWER	1.5	1.5
PREHEAT COIL		
CAPACITY, MBH	100.7	116.0
EAT, °F	44.1	47.4
MAXIMUM APD, IN.	0.17	0.14
GPM	1.4	1.9
MAXIMUM WPD, FT.	0.4	0.3
RUNOUTS, IN.	1.0	1.0
COOLING COIL		
TOTAL, MBH	94.3	100.7
SENSIBLE, MBH	61.0	66.0
EAT, °F	62.4	62.1
°F/DB	69.0	69.2
LAT, °F	51.6	51.5
°F/WB	51.5	51.4
MAXIMUM APD, IN.	1.25	0.94
GPM	15.6	16.0
MAXIMUM WPD, IN.	4.5	5.0
RUNOUTS, IN.	1.5	1.5
HEATING COIL		
CAPACITY, MBH	44.2	46.0
EAT, °F	51.6	51.5
MAXIMUM APD, IN.	0.20	0.07
GPM	3.0	3.4
MAXIMUM WPD, FT.	0.3	0.2
RUNOUTS, IN.	0.75	0.75
FILTERS, TYPE	2" PLEATED MEDIA	2" PLEATED MEDIA
EFFICIENCY, %MERV	30/0	30/0

NOTES:

- CAPACITIES BASED ON: COOLING: 45°F EAT, 12°F WTR, 515 FPM MAXIMUM FAN VELOCITY; HEATING: 180°F EAT, 30°F MTD.
- SUPPLY FAN EXTERNAL PRESSURE INCLUDES FILTER LOADING.
- VOLTAGE/PHASE = 200V/3Ø.
- MINIMUM OUTSIDE AIR = 300 CFM, MAXIMUM OUTSIDE AIR = 850 CFM. MAXIMUM OUTSIDE AIR SHALL BE AVAILABLE DURING PEAK OCCUPANCY AT THE SERVICE OF MEALS.

FANS :

MARK	SYSTEM	ACTUAL CFM	SP IN. WG	MAXIMUM TIP SPEED-PPM	HP (W)	DRIVE	TYPE
EF-1	GENL EXHAUST	100	0.25	1545	(53)	DIRECT	CL6
EF-2	TOILET EXHAUST	100	0.25	1545	(53)	DIRECT	CL6
EF-3	GENL EXHAUST	100	0.25	1545	(53)	DIRECT	CL6
EF-4	GENL EXHAUST	150	0.25	1840	(113)	DIRECT	CL6
EF-5	GENL EXHAUST	150	0.25	1840	(113)	DIRECT	CL6
SF-1	KITCHEN HOOD MAKE-UP	440	1.25	6000	0.75	BELT	ILC
KEF-1	KITCHEN HOOD EXHAUST	600	0.5	3405	0.25	BELT	MPV

NOTES:

- VOLTAGE/PHASE = 120V/1Ø.
- FAN TYPE: ILC = INLINE CENTRIFUGAL, CL6 = CEILING MOUNTED CENTRIFUGAL, MPV = MALL MOUNTED POWER VENTILATOR.
- PROVIDE EF-1 THRU EF-5 1/2" WALL DISCHARGE CAP.
- PROVIDE SF-1 1/2" FILTER BOX HOLDING 2" PLEATED MEDIA FILTERS. EXTERNAL STATIC PRESSURE FIGURE INCLUDES 0.5 IN. FOR FILTER LOADING.

PUMPS :

MARK	SYSTEM	GPM	HEAD, FT. WG.	HP	SIZE	TYPE
CWP-1	CHILLED WATER	35.0	35.0	1.5	1.5x1.5x0.25	ILC

NOTES:

- VOLTAGE/PHASE = 480V/3Ø.
- PUMP TYPE: ILC = INLINE CENTRIFUGAL.

DIFFUSERS, REGISTERS & GRILLES :

MARK	LOCATION USED	FRAME STYLE	DUTY	DESCRIPTION
BR	SEE PLANS	SURFACE MTD	RETURN	FIXED BLADE - 1/2" SPACING 1/32" DEFLECTION, STEEL HEAVY DUTY CONSTRUCTION WITH OPPOSED BLADE DAMPER.
CD	SEE PLANS	SURFACE MTD	SUPPLY	PERFORATED FACE, ROUND NECK, FLUSH FACE
GR	SEE PLANS	SURFACE MTD	EXHAUST	FIXED BLADE, REMOVABLE CORE, ALUMINUM CONSTRUCTION WITH OPPOSED BLADE DAMPER
VAVCD	SEE PLANS	SURFACE MTD	SUPPLY	THERMALLY-POWERED VARIABLE VOLUME, ROUND NECK

NOTES:

- PROVIDE AIR PATTERN (DIRECTION OF THROW) INDICATED ON FLOOR PLANS. PROVIDE FOUR-WAY SUPPLY DIFFUSERS IF NO AIR PATTERN IS SHOWN.
- FURNISH WITH WHITE FINISH.

ELECTRIC DUCT HEATING COIL :

MARK	CFM	MAX APD, IN	CAPACITY MBH	KW	CONTROL STEPS	VOLTAGE/PHASE	FACE DIM, IN W x H
EHC-1	440	0.05	30.7	9.0	MODULATING	200/3	12x8

KITCHEN EXHAUST HOOD :

MARK	DESCRIPTION	SIZE W x H	EXHAUST		SUPPLY		TYPE
			CFM	MAX SP, IN H2O	CFM	MAX SP, IN H2O	
KH-1	WALL CANOPY	48x42	600	0.364	440	0.06	I

NOTES:

- KITCHEN EXHAUST HOODS SHALL BE UL10 LISTED.
- KITCHEN EXHAUST HOODS SHALL BE ENERGIZED AUTOMATICALLY UPON THE START OF COOKING OPERATIONS. EXHAUST DUCT MOUNTED TEMPERATURE SENSORS SHALL ENERGIZE MAKE-UP AND EXHAUST AIR FANS UPON REACHING TEMPERATURE SETPOINT (95°F ADJUSTABLE).

UNHEATED AIR CURTAINS :

MARK	CFM	NOZZLE VEL, FPM	FAN		VOLTAGE/PHASE
			QTY	HP, EA	
UAC-1	3026	3600	1	0.2	200/3
UAC-2	3026	3600	1	0.2	200/3

GENERAL NOTES

- FOR GENERAL ABBREVIATIONS, SEE SHEET A202.
- DUCTWORK INSTALLATION, CONNECTIONS AND CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE LATEST APPLICABLE SMACNA STANDARDS.
- EQUIPMENT INSTALLATIONS SHALL BE IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.
- DUCT DIMENSIONS INDICATED ARE ACTUAL SHEET METAL SIZES, (WHERE ACOUSTIC LINING IS INDICATED (IF SHOWN), THE DUCT SIZES WERE ADJUSTED TO COMPENSATE FOR THE LINING).
- DUCTWORK AND PIPING LAYOUTS ARE SCHEMATIC. ALL DROPS, RISES, OR OFFSETS REQUIRED BUT NOT SHOWN SHALL BE PROVIDED AT NO ADDITIONAL COST TO THE OWNER.
- DUCT CONNECTIONS TO SIDE WALL OR DUCT MOUNTED REGISTERS AND GRILLES SHALL BE WITH RIGID DUCT. DUCT CONNECTIONS TO CEILING-MOUNTED DIFFUSERS, REGISTERS, AND GRILLES MAY BE WITH RIGID OR FLEXIBLE DUCT (CONTRACTOR OPTION). PROVIDE ELBOWS AND TRANSITION SECTIONS AS REQUIRED TO ELIMINATE CRIMPING FLEXIBLE DUCT SECTIONS. PROVIDE SMOOTH BENDS IN FLEXIBLE DUCT SECTIONS.
- DUCTWORK SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE FOLLOWING PRESSURE CLASSIFICATIONS, AND SHALL BE SEALED IN ACCORDANCE WITH SMACNA SEAL CLASS "A". AHU-1 & AHU-2 SUPPLY; *2" RETURN AND EXHAUST; 1"
- DUCT CONNECTIONS TO ALL AIR HANDLING UNITS AND FANS SHALL BE MADE USING FLEXIBLE DUCT CONNECTION. ALSO, PROVIDE FLEXIBLE DUCT CONNECTIONS WHERE DUCTWORK CROSSES BUILDING EXPANSION JOINTS.
- LOCATE CEILING AIR DIFFUSERS, REGISTERS AND GRILLES IN THE CENTER OF 2'x2' AND AT THE QUARTER POINT OF 2' x 4' ACOUSTICAL TILE CEILING MODULES UNLESS SPECIFICALLY INDICATED OTHERWISE ON THE ARCHITECTURAL REFLECTED CEILING PLANS.
- PIPING AND EQUIPMENT HANGERS SHALL BE SPACED IN A SYSTEMATIC RANDOM PATTERN AS REQUIRED TO ELIMINATE OVERLOADING INDIVIDUAL STRUCTURAL MEMBERS. THE ESTIMATED WEIGHT ASSIGNED TO PIPE AND EQUIPMENT HANGERS SHALL BE DETERMINED BY THE MECHANICAL CONTRACTOR AND SUBMITTED TO THE GENERAL CONTRACTOR FOR REVIEW, COORDINATION AND APPROVAL PRIOR TO INSTALLATION. THIS REQUIREMENT APPLIES TO ALL MECHANICAL WORK, INCLUDING PLUMBING AND FIRE PROTECTION.
- HEATING/COOLING DESIGN CONDITIONS: SALEM, VA. WINTER - 12°F OAT, 75°F INDOORS. SUMMER - 92° DB/73° WB OAT; 75°F, 50% RH INDOORS.
- ALL PIPE AND DUCT PENETRATIONS THRU FIRE-RATED WALLS OR FLOOR ASSEMBLIES SHALL BE IN ACCORDANCE WITH AN APPROVED UL AND LISTED SYSTEM FOR THE CONDITIONS ENCOUNTERED AS DEFINED IN THE UL BUILDING MATERIALS DIRECTORY.
- SEE ARCHITECTURAL DRAWINGS FOR FIRE RATED WALLS AND FLOOR ASSEMBLIES, WHERE DUCTWORK PENETRATES A RATED ASSEMBLY HAVING A RATING GREATER THAN 1 HOUR. A UL LISTED FIRE DAMPER WILL BE REQUIRED. USE APPROVED FIRE CAULK WHERE PIPING PENETRATES RATED ASSEMBLIES.
- FIRE DAMPERS LOCATED IN FIRE RATED ASSEMBLIES ARE ADDRESSED ON THESE DRAWINGS IN THE DIRECTION OF ENTERING AIRFLOW.

EQUIPMENT SCHEDULES

Revisions	Date

ARCHITECT/ENGINEERS:

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Approved Energy Engineer	Approved Infection Control	Approved Service Chief
	Approved Safety Manager	Approved Chief of Staff
Approved GEMS Coordinator		Approved Associate Director

Drawing Title:
LEGEND AND EQUIPMENT SCHEDULES - HVAC

Project Title:
Patient Dining Area CLC
VA Medical Center
SFCs Commission Number: 6527.00

Location:
Salem, Virginia

Date: 03/15/12

Checked: -

Drawn: DES

Project Number: 658-307

Building Number(s): 2/2A

Drawing Number: MO.1

Dwg: 50 of 65

Office of Construction and Facilities Management

Department of Veterans Affairs