LEGEND — FITTINGS

PLAN MARK	DESCRIPTION
	DIRECTION OF FLOW
	DIRECTION OF PITCH
	ALIGNMENT GUIDES
	PIPE ANCHOR
	AIR VENT
	CONCENTRIC REDUCER
	ECCENTRIC REDUCER
E	EXPANSION JOINT
	FLEXIBLE CONNECTION
	STRAINER
D/A	STRAINER W/ DRAIN
	UNION
	PIPE TRAP
	ELBOW DOWN
	ELBOW UP
	TEE TURNED DOWN
	TEE TURNED UP
	BLIND FLANGE
	PIPE CAP

LEGEND — VALVES

PLAN MARK	DESCRIPTION
	3-WAY CONTROL VALVE
	ANGLE GATE VALVE
	ANGLE GLOBE VALVE
	BALANCING VALVE
	BALL VALVE
	BUTTERFLY FLY VALVE
	CHECK VALVE
	CONTROL VALVE
	GENERIC VALVE
	GLOBE VALVE
	OS&Y VALVE
	NEEDLE VALVE
	PLUG VALVE
	POST INDICATOR VALVE
	PRESSURE ERG. VALVE
	QUICK OPENING VALVE
	SAFETY RELIEF VALVE

LEGEND — DEVICES

PLAN MARK	DESCRIPTION
	PRESSURE GAUGE
	THERMOMETER
P	PRESSURE SENSOR
T	TEMPERATURE SENSOR
F	FLOW SWITCH
	FIRE ALARM SWITCH
P	PRESSURE SWITCH
B	BUCKET TRAP
F	FLOAT TRAP
T	THERMOSTATIC TRAP
	GENERIC STEAM TRAP
AVA	AUTO VALVE ASSEMBLY
BS	BALANCE STATION
DA	DRIP ASSEMBLY
FM	FLOW METER
	VENTURI FLOW METER
	WATER HAMMER
FM	FLOW METER
M	MOTORIZED VENTILATION DAMPER

LEGEND — HVAC

PLAN MARK	DESCRIPTION
AD	ACCESS DOOR
AP	ACCESS PANEL
	LINEAR DIFFUSER
	FLOOR GRILLE
	DOOR GRILLE
	DOOR UNDERCUT
	FLEXIBLE DUCT
	SENSOR
	HUMIDISTAT
	THERMOSTAT
S	THERMOSTAT (SENSOR ONLY)
	NEW CONNECTION
	CAP EXISTING
	NEW OPENING
	PIPE (SHOWN IN SECTION VIEW)

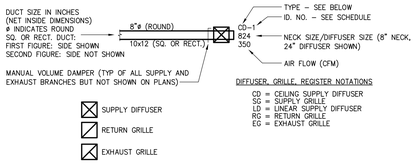
MECHANICAL ABBREVIATIONS

AFF	ABOVE FINISHED FLOOR
AHU	AIR HANDLING UNIT
BDD	BACKDRAFT DAMPER
B	BOILER
BTU	BRITISH THERMAL UNIT
CAP	CAPACITY
CD	COOLING COIL CONDENSATE DRAIN
CFM	CUBIC FEET PER MINUTE
CH	CHILLER
CWS	CHILLED WATER SUPPLY
CWR	CHILLED WATER RETURN
CUH	CABINET UNIT HEATER
DN	DOWN
(D)	DEMOLISH
(E)	EXISTING TO REMAIN
EAT	ENTERING AIR TEMPERATURE
ESP	EXTERNAL STATIC PRESSURE
EWB	ENTERING WET BULB TEMPERATURE
EWT	ENTERING WATER TEMPERATURE
EXH	EXHAUST
EA	EXHAUST AIR
EG	EXHAUST GRILLE
ERV	ENERGY RECOVERY VENTILATOR
ES	END SWITCH
FD	FIRE DAMPER
FS	FIRE/SMOKE DAMPER
GPM	GALLONS PER MINUTE
GS	GLYCOL SUPPLY
GR	GLYCOL RETURN
HVAC	HEATING, VENTILATION, AND AIR CONDITIONING
HZ	HERTZ (FREQUENCY IN CYCLES PER SECOND)
HWS	HEATING HOT WATER SUPPLY
HWR	HEATING HOT WATER RETURN
IN	INCHES
IN WC	INCHES (WATER COLUMN)
LB	POUND
MAX	MAXIMUM
MED	MEDIUM
MEZZ	MEZZANINE
MIN	MINIMUM
MU	MAKE-UP WATER
MBH	BRITISH THERMAL UNIT (1000)
NC	NOISE CRITERIA
OA	OUTSIDE AIR
PH	PHASE
PRESS	PRESSURE
PSI	POUNDS PER SQUARE INCH
PSIG	POUNDS PER SQUARE GAUGE
RA	RETURN AIR
RG	RETURN GRILLE
RPM	REVOLUTIONS PER MINUTE
RL	REFRIGERANT LIQUID
RS	REFRIGERANT SUCTION
SF	SQUARE FOOT
SA	SUPPLY AIR
SD	SMOKE DAMPER
CD	SUPPLY DIFFUSER
TEMP	TEMPERATURE
TOT	TOTAL
TYP	TYPICAL
UL	UNDERWRITERS LABORATORIES
VAV	VARIABLE AIR VOLUME
VFD	VARIABLE FREQUENCY DRIVE
W/	WITH
W/O	WITHOUT
WB	WET BULB

HVAC

SIZE	DOOR GRILLE
H T P	SENSOR (TYPE AS NOTED) H=HUMIDITY T=TEMPERATURE P=PRESSURE
CD FD SD	DAMPER (TYPE AS NOTED) BDD, FD/SD, ETC. WITH END SWITCH
	AUTOMATIC DAMPER
	MANUAL DAMPER
	CEILING DIFFUSER (SIZE AND TYPE AS NOTED)
	RETURN GRILLE (SIZE AND TYPE AS NOTED)
	EXHAUST GRILLE (SIZE AND TYPE AS NOTED)
	DUCT BREAK LINES – RECTANGULAR AND CIRCULAR
	SIDEWALL GRILLE (SIZE AND TYPE AS NOTED)
	FLEXIBLE DUCT CONNECTION
	TRANSFER DUCT
	NEW CONNECTION TO EXISTING PIPE OR DUCT
	CAP EXISTING PIPE OR DUCT
	NEW OPENING THRU EXISTING CONSTRUCTION
	SUPPLY DUCTWORK (SECTIONAL VIEW)
	RETURN DUCTWORK (SECTIONAL VIEW)
	EXHAUST DUCTWORK (SECTIONAL VIEW)
	DUCT TURNED UP OR TOWARD (SUPPLY SHOWN)
	DUCT TURNED DOWN OR AWAY (SUPPLY SHOWN)
	SQUARE ELBOW WITH TURNING VANES
	CONICAL TAP TAKE-OFF
	45° ENTRY TAKE-OFF WITH SPLITTER DAMPER
	DOUBLE SIDED TRANSITION
	SINGLE SIDED TRANSITION

DIFFUSER NOTATION



DIFFUSER, GRILLE, REGISTER NOTATIONS

CD = CEILING SUPPLY DIFFUSER
SG = SUPPLY GRILLE
LD = LINEAR SUPPLY DIFFUSER
RG = RETURN GRILLE
EG = EXHAUST GRILLE

PUMP SCHEDULE

PLAN MARK	SYSTEM SERVED	TYPE	GPM	HEAD (FT)	SHUTOFF HEAD (FT)	MOTOR DATA HP	VOLTS	ø	RPM	ROOM (LOCATION)	REMARKS
HWP-1	HEATING HOT WATER	INLINE	60	65	95	3.0	480	3	1750	130	VFD BY DIV 26
HWP-2	HEATING HOT WATER	INLINE	60	65	95	3.0	480	3	1750	130	VFD BY DIV 26

CONVERTOR SCHEDULE – STEAM/HOT WATER

PLAN MARK	CAPACITY (MBH)	WATER GPM	WATER MAX PD (FT)	WATER EWT (°F)	WATER LWT (°F)	STEAM PSIG	STEAM LB/HR	TUBE FOULING FACTOR	ROOM (LOCATION)	REMARKS
C-1	600	60	4.0	160	180	15	610	.	130	4 PASS, 10" DIA, 24" LENGTH
C-2	600	60	4.0	160	180	15	610	.	130	4 PASS, 10" DIA, 24" LENGTH

AIR SEPARATOR SCHEDULE

PLAN MARK	SIZE (IN)	CAPACITY (GPM)	MAX PD (FT)	DESIGN BASIS	ROOM (LOCATION)	REMARKS
AS-1	2 1/2	60	1.0	AIR AND DIRT SEPARATOR	130	HEATING HOT WATER

EXPANSION TANK SCHEDULE

PLAN MARK	SYSTEM SERVED	TYPE	TANK CAPACITY (GAL)	ACCEPTANCE CAPACITY (GAL)	ROOM (LOCATION)	REMARKS
ET-1	HEATING HOT WATER	DIAPHRAGM	11	5	130	

UNIT HEATER (HYDRONIC) SCHEDULE

PLAN MARK	TYPE	CFM	EAT (°F)	LAT (°F)	MBH	GPM	FAN MOTOR DATA HP	VOLTS	ø	MCA	ROOM (LOCATION)	REMARKS
UH-1	PROPELLER	750	60	110	34.8	3.5	1/20	115	1	1.8	130	
UH-2	PROPELLER	750	60	110	34.8	3.5	1/20	115	1	1.8	130	

NOTES:
1. HEATING IS BASED ON WATER 180°F EWT.

UNIT HEATER (STEAM) SCHEDULE

PLAN MARK	TYPE	CFM	EAT (°F)	LAT (°F)	PSI	LB/HR	FAN MOTOR DATA HP	VOLTS	ø	MCA	ROOM (LOCATION)	REMARKS
UH-3	PROPELLER	750	60	110	15	35	1/20	115	1	1.8	1C04	
UH-4	PROPELLER	750	60	110	15	35	1/20	115	1	1.8	1C04	
UH-5	PROPELLER	750	60	110	15	35	1/20	115	1	1.8	1C04	

CABINET UNIT HEATER (HYDRONIC) SCHEDULE

PLAN MARK	CFM	EAT (°F)	LAT (°F)	MBH	GPM	FAN MOTOR DATA HP	VOLTS	ø	MCA	ROOM (LOCATION)	REMARKS
CUH-1	430	60	95	15.2	4.1	0.07	115	1	–	1ST02	HORIZONTAL CABINET
CUH-2	430	60	95	15.2	4.1	0.07	115	1	–	1C01	HORIZONTAL CONCEALED

NOTES:
1. HEATING IS BASED ON WATER 180°F EWT.

DIFFUSERS, REGISTERS & GRILLES SCHEDULE

IDENT NO.	MATERIAL OF CONSTRUCTION	DESCRIPTION	FACTORY FINISH	BLOW PATTERN	REMARKS
CD-1	STEEL	LOUVERED	OFFWHITE	4-WAY	24x24 FACE AREA, PROVIDE OPPOSED BLADE DAMPER
RG-1	ALUMINUM	PERFORATED	OFFWHITE	–	
EG-1	ALUMINUM	PERFORATED	OFFWHITE	–	
LD-1	ALUMINUM	(2) 3/4" SLOTS	OFFWHITE	VERTICAL	WITH INSULATED PLENUM
SG-1	ALUMINUM	LOUVERED	OFFWHITE	DOUBLE DEFLECTION	WALL/DUCT MOUNTED, 3/4" BLADE SPACING
RR-1	ALUMINUM	LOUVERED	OFFWHITE	35° DEFLECTION	WALL MOUNTED, 3/4" BLADE SPACING
ER-1	ALUMINUM	LOUVERED	OFFWHITE	35° DEFLECTION	WALL MOUNTED, 3/4" BLADE SPACING

NOTES:
1. COORDINATE MOUNTING STYLE WITH CEILING TYPE.
2. CONTRACTOR SHALL PROVIDE CUSTOM COLOR CHART TO ARCHITECT FOR COLOR DETERMINATION.

STEAM CONDENSATE PUMPING TRAP SCHEDULE

PLAN MARK	STEAM PRESSURE (PSIG)	PUMPING CAPACITY (LBS/HR)	ROOM (LOCATION)	REMARKS
CP-1	15	1470	130	STEAM DRIVEN, NON-ELECTRIC PUMPING TRAP SKID MOUNTED PACKAGE

NOTE: PUMPING TRAP PACKAGE INCLUDES DUPLEX STEAM DRIVEN CONDENSATE PUMPS, ASME RECEIVER, PRV STATION, ISOLATION VALVES, CHECK VALVES, AND ALL INTERCONNECTING PIPING AND FITTINGS.

GRAVITY RELIEF HOOD SCHEDULE

PLAN MARK	SERVICE	CFM	THROAT SIZE	MAX PD (INCH WC)	OVERALL SIZE	REMARKS
GRH-1	(E) TRASH ROOM	2,500	18"X48"	0.024	24"X54"	
GRH-2	(E) TANK STORAGE AREA	2,500	18"X48"	0.024	24"X54"	

NOTE: 1. GENERAL CONTRACTOR TO PROVIDED MINIMUM 12" HIGH ROOF CURB SUITABLE FOR FLAT ROOF.

AIR HANDLING UNIT SCHEDULE

PLAN MARK	MAX. CFM	COOLING MINIMUM OA CFM	HEATING MINIMUM OA CFM	ESP (IN WC)	TSP (IN WC)	FAN MOTOR DATA HP	VOLTS	ø	COOLING COIL EAT (°F) DB	EAT (°F) WB	LAT (°F) DB	LAT (°F) WB	GPM	MBH SENS	MBH TOT	STEAM PREHEAT COIL EAT (°F)	LAT (°F)	PSI	MBH	DESIGN BASIS
AHU-2-21	5400	1000	1000	1.5	3.0	10	480	3	80	67	55	54	41.4	149	208	20	70	15	291	TRANE PERFORMANCE CLIMATE CHANGER SIZE 10
AHU-2-11	5400	1000	1000	1.5	3.0	10	480	3	80	67	55	54	41.4	149	208	20	70	15	291	TRANE PERFORMANCE CLIMATE CHANGER SIZE 10

NOTES:
1. THE FOLLOWING NOTES APPLY TO EACH UNIT:
   A. COOLING IS BASED ON WATER, 45°F EWT, 54°F LWT. MAXIMUM COIL WATER PRESSURE DROP SHALL NOT EXCEED 10 FEET.
   B. TOTAL STATIC PRESSURE INCLUDES AN ALLOWANCE FOR DIRTY FILTER.
   C. MAXIMUM CHILLED WATER COIL FACE VELOCITY SHALL BE 500 FPM.
   D. VFD PROVIDED BY DIVISION 26.
   E. PROVIDE WITH 2" THICK MERV 7 FILTERS.
   F. PROVIDE WITH 6" HIGH BASE RAIL.

RETURN FAN SCHEDULE

PLAN MARK	TYPE	CFM	ESP (IN H_2O)	NO FLOW ESP (IN H_2O)	MOTOR DATA HP	VOLTS	ø	DRIVE	RPM	ROOM (LOCATION)	DESIGN BASIS	REMARKS
RF-1	INLINE	5400	1.5	3.0	3	480	3	BELT	1504	130	GREENHECK VAB	VFD BY DIV. 26
RF-2	INLINE	5400	1.5	3.0	3	480	3	BELT	1504	130	GREENHECK VAB	VFD BY DIV. 26

EXHAUST FAN SCHEDULE

PLAN MARK	TYPE	CFM	ESP (IN H_2O)	NO FLOW ESP (IN H_2O)	MOTOR DATA HP	VOLTS	ø	DRIVE	RPM	ROOM (LOCATION)	DESIGN BASIS	REMARKS
EF-1	ROOF MOUNTED	450	0.5	0.7	1/6	120	1	DIRECT	1500	ROOF	GREENHECK CUE, UPBLAST	
EF-2	ROOF MOUNTED	900	1.0	2.0	1/2	480	3	DIRECT	1725	ROOF	GREENHECK CUE, UPBLAST	
EF-3	ROOF MOUNTED	120	0.25	0.43	1/60	120	1	DIRECT	1550	ROOF	GREENHECK CUE, UPBLAST	

NOTES:
1. GENERAL CONTRACTOR SHALL PROVIDE A 18" HIGH MINIMUM ROOF CURB FOR ALL EXHAUST FANS.

VARIABLE AIR VOLUME BOX SCHEDULE

PLAN MARK	INLET SIZE (INCHES)	CFM NOM	CFM MIN	MIN SP (INCH WC)	HOT WATER HEATING COIL REHEAT CFM	MINIMUM TEMP	MBH	GPM	MAXIMUM DISCHARGE NC	ROOM (LOCATION)	REMARKS
VAV-2-101	5	265	135	0.10	200	95	8.9	1.3	25	114	PROVIDE WITH SILENCER
VAV-2-102	5	305	155	0.12	230	95	10.3	2.2	25	114	PROVIDE WITH SILENCER
VAV-2-103	10	1000	500	0.51	750	95	33.5	4.3	25	114	PROVIDE WITH SILENCER
VAV-2-104	10	1300	650	0.82	975	95	43.5	5.6	25	114	PROVIDE WITH SILENCER
VAV-2-105	9	470	235	0.08	355	95	15.9	1.4	25	114	PROVIDE WITH SILENCER
VAV-2-106	7	360	180	0.12	270	95	12.1	1.6	25	114	PROVIDE WITH SILENCER
VAV-2-107	5	200	100	0.05	150	95	6.7	1.0	25	114	PROVIDE WITH SILENCER
VAV-2-108	5	170	170	0.05	170	95	7.6	0.8	25	113	PROVIDE WITH SILENCER
VAV-2-109	5	225	115	0.05	170	95	7.4	0.7	25	107	PROVIDE WITH SILENCER
VAV-2-110	9	825	415	0.30	620	95	26.9	2.7	25	1C02	PROVIDE WITH SILENCER
VAV-2-111	7	525	265	0.31	395	95	17.1	1.7	25	BCS05	PROVIDE WITH SILENCER
VAV-2-112	5	325	165	0.24	--	--	--	--	25	1C02	
VAV-2-201	5	325	165	0.24	245	95	14.4	1.4	25	204	PROVIDE WITH SILENCER
VAV-2-202	5	300	150	0.84	225	95	12.2	1.2	25	204	PROVIDE WITH SILENCER
VAV-2-203	5	350	175	0.24	265	95	14.4	1.4	25	204	PROVIDE WITH SILENCER
VAV-2-204	5	225	115	0.05	170	95	7.4	0.7	25	204	PROVIDE WITH SILENCER
VAV-2-205	7	525	265	0.31	395	95	17.1	1.7	25	204	PROVIDE WITH SILENCER
VAV-2-206	5	350	175	0.24	265	95	14.4	1.4	25	204	PROVIDE WITH SILENCER
VAV-2-207	5	150	150	0.06	150	95	9.8	1.0	25	204	PROVIDE WITH SILENCER
VAV-2-208	7	525	265	0.31	125	95	17.1	1.7	25	204	PROVIDE WITH SILENCER
VAV-2-209	6	425	215	0.36	315	95	17.1	1.7	25	204	PROVIDE WITH SILENCER
VAV-2-210	6	500	250	0.29	375	95	20.3	2.0	25	204	PROVIDE WITH SILENCER
VAV-2-211	5	200	100	0.09	200	95	10.9	1.1	25	204	PROVIDE WITH SILENCER
VAV-2-212	5	350	175	0.24	265	95	14.4	1.4	25	204	PROVIDE WITH SILENCER
VAV-2-213	5	250	125	0.13	190	95	10.3	1.0	25	203	PROVIDE WITH SILENCER
VAV-2-214	5	150	150	0.06	150	95	9.8	1.0	25	203.1	PROVIDE WITH SILENCER
VAV-2-215	5	250	125	0.13	190	95	10.3	1.0	25	203	PROVIDE WITH SILENCER
VAV-2-216	5	225	115	0.05	170	95	7.4	0.7	25	2C02	PROVIDE WITH SILENCER
VAV-2-217	7	600	300	0.40	450	95	24.4	2.4	25	2C02	PROVIDE WITH SILENCER

NOTES: 1. STATIC PRESSURE DATA GIVEN IS WITH DAMPER FULL OPEN.
2. HEATING DATA IS BASED ON WATER, 160°F LWT, 180°F EWT.
3. VAV'S TO HAVE HOT WATER REHEAT COIL, EXTERNALLY INSULATED WITH 1" INSULATION

BLOWER COIL UNIT SCHEDULE

PLAN MARK	CFM	OA CFM	EXT SP (INCH WC)	FAN MOTOR DATA HP	VOLTS	ø	COOLING COIL DATA MBH SENS	MBH TOT	EAT (°F) DB	EAT (°F) WB	LAT (°F) DB	GPM	REHEAT COIL MBH	EAT (°F)	LAT (°F)	GPM	REMARKS
BCU-1	3000	0	0.5	1.0	480	3	92.9	137.4	80	67	52	27.5	128.5	60	100	12.8	.

NOTES: 1. COOLING IS BASED ON WATER, 45°F EWT, 54°F LWT.
MAXIMUM COIL WATER PRESSURE DROP SHALL NOT EXCEED 20 FEET.
2. HEATING IS BASED ON WATER, 160°F EWT, 180°F LWT.
MAXIMUM COIL WATER PRESSURE DROP SHALL NOT EXCEED 10 FEET.
3. UNIT SHALL BE PROVIDED WITH 1" THICK MERV 8 FILTER.

SOUND ATTENUATOR SCHEDULE

PLAN MARK	UNIT SERVED	SIZE	AIRFLOW (CFM)	MAX PD (INCH WC)	FACE VELOCITY (FPM)	DYNAMIC INSERTION LOSS, Db HERTZ 63	125	250	500	1K	2K	4K	8K	REMARKS
SA-1	AHU-2-21	40"x20"x48"	4500	0.05	1300	2	2	6	16	19	11	7	2	
SA-2	RF-1	40"x20"x48"	4500	0.05	1300	2	2	6	16	19	11	7	2	
SA-3	AHU-2-11	40"x20"x48"	4500	0.05	1300	2	2	6	16	19	11	7	2	
SA-4	RF-2	40"x20"x48"	4500	0.05	1300	2	2	6	16	19	11	7	2	

UV LIGHT SCHEDULE

PLAN MARK	UNIT SERVED	COOLING COIL WxH (IN)	ELECTRICAL VOLTS	PHASE	TOTAL AMPS	DESIGN BASIS	REMARKS
UV-1	AHU-2-21	72X41.5	120	1	3.4	STERIL-AIRE DE	2 ROWS, EACH WITH 2 30" LONG EMITTERS
UV-2	AHU-2-11	72X41.5	120	1	3.4	STERIL-AIRE DE	2 ROWS, EACH WITH 2 30" LONG EMITTERS

NOTES:
1. FIELD VERIFY DIMENSIONS FOR UV LIGHT SYSTEMS.
2. PROVIDE SUPPORT FRAMEWORK FOR UV LIGHTS IN AHU'S CONSTRUCTED OF UNI-STRUT. CABLE TIE CORDS TO FRAMEWORK.
3. PROVIDE DOOR INTERLOCK SWITCH TO DISABLE UV LIGHTS UPON OPENING OF ACCESS DOOR.

2-1

Revisions | Date

SHIVEHATTERY
ARCHITECTURE + ENGINEERING
2834 Northgate Drive | Iowa City, Iowa 52245
319.354.3040 | fax: 319.354.6921 | shive-hattery.com
Iowa | Illinois | Missouri

Drawing Title: MECHANICAL LEGEND AND SCHEDULES

Project Title: RENOVATE AND EXPAND SPACE FOR PATIENT SUPPORT AREAS

Date 12-05-2014 CONSTRUCTION DOCUMENTS

Project No. DVA#656-311 S-H#110240-0

Approved: Division Chief

Building Number 2 | Checked TRF | Drawn MSJ

Approved: Service Director

Location: IOWA CITY VA HEALTH CARE SYSTEM, IOWA CITY, IOWA

DRAWING NO. 2-H6

Dwg. 18 Of 24

Veterans Administration