WATER SOURCE HEAT PUMP SCHEDULE

UNIT NO.	TYPE	FAN PERFORMANCE CFM	FAN PERFORMANCE E.S.P. (IN. WG.)	FAN PERFORMANCE HP	FAN PERFORMANCE RPM	VOLT/PH	COOLING PERFORMANCE EAT°F DB	EAT°F WB	ENT °F	TOTAL MBH	SENSIBLE MBH	HEAT REJ. MBH	HEATING PERFORMANCE EAT °F DB	EAT °F	ENT °F	TOTAL MBH	HEAT ABSORB. MBH	COMPRESSOR QTY.	RLA	LRA	MCA	MAX FUSE SIZE	GPM	P.D. FT.	BASIS OF DESIGN MANUFACTURER - MODEL
HP-1	HORIZONTAL	300	1.0	0.10	-	208/1	78.3	65.3	90.0	9.66	6.61	12.85	60.0	46.0	70.28	8.16	1	4	20	6.0	15.0	3.00	11.9	FLORIDA HEAT PUMP - EC012 (1)(3)
HP-2	HORIZONTAL	515	1.0	0.25	-	208/1	77.1	64.8	90.0	16.21	11.43	21.54	62.0	46.0	71.84	12.61	1	8.4	48	12.53	20.0	5.00	22.2	FLORIDA HEAT PUMP - EC018 (1)(3)
HP-3	HORIZONTAL	1200	0.51	0.50	-	208/3	77.3	64.4	90.0	33.14	26.60	43.64	63.3	46.0	36.23	26.43	1	10	78	16.4	25.0	9.00	9.9	FLORIDA HEAT PUMP - EC036 (1)
HP-4	HORIZONTAL	300	1.0	0.10	-	208/1	78.3	65.3	90.0	9.66	6.61	12.85	60.0	46.0	71.28	8.16	1	4	20	6.0	15.0	3.00	11.9	FLORIDA HEAT PUMP - EC012 (1)(3)
HP-5	HORIZONTAL	515	1.0	0.25	-	208/1	77.1	64.8	90.0	16.21	11.43	21.54	62.0	46.0	71.84	12.61	1	8.4	48	12.53	20.0	5.00	22.2	FLORIDA HEAT PUMP - EC018 (1)(3)
HP-6	HORIZONTAL	400	0.54	0.25	-	208/3	76.1	63.5	90.0	25.90	20.10	34.16	63.3	46.0	27.14	19.96	1	8.9	58	13.0	20.0	7.00	14.8	FLORIDA HEAT PUMP - EC030 (1)
HP-7	HORIZONTAL	515	1.0	0.25	-	208/1	77.1	64.8	90.0	16.21	11.43	21.54	62.0	46.0	71.84	12.61	1	8.4	48	12.53	20.0	5.00	22.2	FLORIDA HEAT PUMP - EC018 (1)(3)
HP-8	HORIZONTAL	1500	0.9	0.75	-	208/3	76.3	63.6	90.0	41.52	32.14	55.04	66.1	46.0	46.64	34.12	1	16.1	120	25.4	40.0	12.0	11.1	FLORIDA HEAT PUMP - EC048 (1)
HP-9	HORIZONTAL	1020	1.2	0.50	-	208/3	74.6	66.3	90.0	29.77	21.87	37.46	60.0	46.0	31.93	23.81	1	10.4	35	17.3	20.0	9.00	9.5	FLORIDA HEAT PUMP - ES036 (1)
HP-10	VERTICAL	1200	1.2	0.50	-	208/3	74.0	65.8	90.0	30.20	24.24	38.67	60.0	46.0	32.84	24.56	1	10.4	35	17.3	20.0	9.00	9.5	FLORIDA HEAT PUMP - ES036 (1)
HP-11	VERTICAL	4310	0.94	2.00	-	208/3	74.0	65.8	90.0	116.83	97.70	154.29	60.0	46.0	132.84	96.72	2	18	123	46.9	60.0	28.00	14.0	FLORIDA HEAT PUMP - EC120 (1)
HP-12	HORIZONTAL	560	0.44	0.25	-	208/1	75.0	62.5	90.0	15.7	11.62	20.96	75.0	46.0	15.0	9.45	1	8.4	48	12.3	20.0	5.0	22.7	FLORIDA HEAT PUMP - EC018 (1)(2)

(1) ALL VALVES TO BE ACCESSIBLE (2) PROVIDE WATERSIDE ECONOMIZER PACKAGE (3) PROVIDE HIGH STATIC ECM FAN MOTOR TO MEET STATIC PRESSURE REQUIREMENTS

FAN SCHEDULE

GENERAL UNIT NO	SERVICE	LOCATION	FAN TYPE	CFM	FAN WHEEL DIA	FAN WHEEL TYPE	T.S.P. (IN. WG.)	RPM	MOTOR HP	MOTOR VOLTS	MOTOR PH	BASIS OF DESIGN
EF-1	EXHAUST	14 - BOYS' BATHROOM	CABINET	310	-	-	.25	1153	1/4	120	1	GREENHECK BCF-106-4 (1)
EF-2	EXHAUST	25 - GIRLS'S BATHROOM	CABINET	310	-	-	.25	1153	1/4	120	1	GREENHECK BCF-106-4 (1)
EF-3	EXHAUST	18 - MEN'S RESTROOM	CEILING	75	-	-	.40	950	80W	120	1	GREENHECK SP-B110 (1)
EF-4	EXHAUST	30 - WOMEN'S RESTROOM	CEILING	75	-	-	.40	950	80W	120	1	GREENHECK SP-B110 (1)
EF-5	EXHAUST	43 - JANITOR'S CLOSET	CEILING	75	-	-	.40	950	80W	120	1	GREENHECK SP-B110 (1)
EF-6	EXHAUST	23 - JANITOR'S CLOSET	CEILING	75	-	-	.40	950	80W	120	1	GREENHECK SP-B110 (1)

(1) PROVIDE WITH BACKDRAFT DAMPER.

AIR DEVICE SCHEDULE

NOTES:
1. THIS SCHEDULE SHALL BE USED TO DETERMINE AIR DEVICE TYPE AND SIZE.
2. SIZE SHALL BE BASED ON CFM SHOWN ON FLOOR PLANS AND/OR OTHER RELATED DRAWINGS UNLESS OTHERWISE INDICATED ON THE DRAWINGS.
3. SEE ARCH. REFLECTED CEILING PLANS AND/OR ARCH. ROOM FINISH SCHEDULES TO DETERMINE CEILING TYPES WHERE AIR DEVICES ARE TO BE INSTALLED AND PROVIDE ALL ACCESSORIES REQUIRED FOR A COMPLETE AND FINISHED INSTALLATION.
4. SEE SPECIFICATION SECTION 15832 FOR ADDITIONAL REQUIREMENTS.

SYMBOL	TYPE	SIZE (IN) NECK	SIZE (IN) FACE	CFM RANGE	DESCRIPTION	BASIS OF DESIGN
S-1	SUPPLY LAY-IN CEILING DIFFUSER	8" ø	24 x 24	0 - 250	LOUVERED FACE SQUARE CEILING DIFFUSER WITH THREE CONES, STEEL CONSTRUCTION, FRAME FOR T-BAR LAY-IN CEILING OR SURFACE MOUNTING AS REQUIRED, WITH OPPOSED BLADE DAMPER.	TITUS "TMS"
		10" ø	24 x 24	251 - 385		
		12" ø	24 x 24	385 - 475		
S-2	SUPPLY SPIRAL DUCT GRILLE	NA	10 x 4	0 - 150	SPIRAL DUCT GRILLE, EXTRUDED ALUMINUM CONSTRUCTION. DOUBLE DEFLECTION. BLADES PARALLEL TO LONG DIMENSION. PROVIDE AIR SCOOP DAMPERS, EXCEPT ON RETURN GRILLES. BLADE ANGLE SETTING 22.5 DEGREES. BLADE SPACING 3/4".	TITUS "S300FL"
		NA	12 x 4	151 - 250		
		NA	18 x 6	251 - 350		
		NA	18 x 8	351 - 450		
S-3	SUPPLY LAY-IN CEILING DIFFUSER	8" ø	24 x 24	0 - 250	STEPPED DOWN LOUVERS, FIRE RATED, STEEL CONSTRUCTION. ADJUSTABLE VANES TO CHANGE DIRECTION OF AIR FLOW	TITUS "TMS-FR"
		10" ø	24 x 24	251 - 385		
		12" ø	24 x 24	385 - 475		
R-1	RETURN LAY-IN CEILING DIFFUSER	8" ø	24 x 24	0 - 250	PERFORATED CEILING DIFFUSER, STEEL CONSTRUCTION. FRAME FOR T-BAR LAY-IN CEILING OR SURFACE MOUNTING AS REQUIRED.	TITUS "PAR"
		10" ø	24 x 24	251 - 385		
		12" ø	24 x 24	385 - 475		
R-2	RETURN REGISTER	-	36 x 12	0 - 1000	HEAVY DUTY APPLICATION, 1/2" BAR SPACING STEEL REGISTER, 38 DEG. DEFLECTION, FLANGE FRAMES, AND OBD.	TITUS "33RL"
		-	42 x 12	1001 - 1200		
		-	36 x 36	1201 - 3150		
		-	48 x 30	3151 - 4500		
R-3	RETURN REGISTER	-	8 x 6	0 - 175	HORIZONTAL BARS, 35 DEG. DEFLECTION, STEEL REGISTER, 1/2" SPACING, FLANGE FRAMES, O.B.D., OFF-WHITE FINISH, 30 NC MAX., 0.10 NEG. S.P. MAX.	TITUS "355 RL"
		-	12 x 6	176 - 250		
		-	18 x 12	251 - 560		
R-4	RETURN REGISTER	-	8 x 6	0 - 175	PERFORATED CEILING DIFFUSER, FIRE RATED, STEEL CONSTRUCTION. FRAME FOR T-BAR LAY-IN CEILING OR SURFACE MOUNTING AS REQUIRED.	TITUS "PAR-FR"
		-	12 x 6	176 - 250		
		-	18 x 12	251 - 560		
E-1	EXHAUST GRILLE	6 x 6	24 x 24	0 - 75	HORIZONTAL BARS, 35 DEG. DEFLECTION, STEEL REGISTER, 1/2" SPACING, FLANGE FRAMES, O.B.D., OFF-WHITE FINISH, 30 NC MAX., 0.10 NEG. S.P. MAX.	TITUS "355 RL"
		8 x 8	24 x 24	76 - 175		
		12 x 12	24 x 24	176 - 450		
		16 x 16	24 x 24	451 - 800		
		18 X 18	24 x 24	801 - 1050		
T-1	TRANSFER CEILING GRILLE	-	6 x 6	0 - 100	EGGCRATE CEILING GRILLE WITH 1/4" BORDER FRAME FOR SURFACE MOUNTING OR LAY-IN FRAME, OFF-WHITE, O.B.D., COUNTERSUNK SCREWS.	TITUS "50 F"
		-	8 x 8	101 - 200		

1

PUMP SCHEDULE

GENERAL UNIT NO.	SERVES	LOCATION	PUMP TYPE	GPM	T.D.H. (FT)	EFFICIENCY	RPM	HP	VOLTS	PHASE	REMARKS/BASIS OF DESIGN
P-1	DINING BLDG	45 - MECH / ELEC	INLINE	28	54.5	40.41%	3450	1.50	208	3	BELL & GOSSETT 90-1 AA
P-2	DINING BLDG	45 - MECH / ELEC	INLINE	28	54.5	40.41%	3450	1.50	208	3	BELL & GOSSETT 90-1 AA
P-3	DORM BLDG	40 - MECH	INLINE	54	87.4	51.84%	3450	5.0	208	3	BELL & GOSSETT 90 1-1/2AA
P-4	DORM BLDG	40 - MECH	INLINE	54	87.4	51.84%	3450	5.0	208	3	BELL & GOSSETT 90 1-1/2AA
P-5	DINING & DORM	SEE PLANS	COND PUMP	0.75	10	-	-	1/30	115	1	LITTLE GIANT VCC-20 SERIES (1)

(1) PROVIDE ONE CONDENSATE PUMP AT EACH WATER SOURCE HEAT PUMP

ELECTRIC UNIT HEATER SCHEDULE

UNIT NO	SERVES	TYPE	CFM	AIR TEMP RISE °F	BTUWR	KW	AMPS	VOLTS	PH	BASIS OF DESIGN
EUH-1	40 - MECH.	WALL MOUNTED	245	27	6,826	2.0	9.6	208	1	TRANE UHHA - SERIES 20 (1)(2)
EUH-2	NOT USED	-	-	-	-	-	-	-	-	-
EUH-3	NOT USED	-	-	-	-	-	-	-	-	-
EUH-4	42 - RECYCLING	WALL MOUNTED	245	27	6,826	2.0	9.6	208	1	TRANE UHHA - SERIES 20 (1)(2)
EUH-5	45 MECH. / ELEC.	WALL MOUNTED	245	27	6,826	2.0	9.6	208	1	TRANE UHHA - SERIES 20 (1)(2)
EUH-6	44 PANTRY	WALL MOUNTED	245	27	6,826	2.0	9.6	208	1	TRANE UHHA - SERIES 20 (1)(2)

(1) SURFACE MOUNTED (2) PROVIDE THERMOSTAT WITH TAMPER RESISTANT COVER PLATE

AIR SEPARATOR SCHEDULE

UNIT NO	LOCATION	SERVES	CAPACITY (GPM)	MAX WPD (FT)	TYPE	REMARK
AS-1	MECH ROOM - 45	CONDENSER WATER SYSTEM	28	0.44	FULL FLOW, WITHOUT STRAINER	B & G ROLAIRTROL MODEL R-2
AS-2	MECH ROOM - 40	CONDENSER WATER SYSTEM	54	1.0	FULL FLOW, WITHOUT STRAINER	B & G ROLAIRTROL MODEL R-2 1/2

EXPANSION TANK SCHEDULE

UNIT NO	LOCATION	SERVES	TOT. VOL.	MIN. ACCEPTANCE VOLUME (GAL)	REMARKS
ET-1	MECH ROOM - 45	CONDENSER WATER SYSTEM	4	2.5	TACO CBX15 (1)
ET-2	MECH ROOM - 40	CONDENSER WATER SYSTEM	11	5	TACO CBX42 (1)

NOTE:

(1) FULL ACCEPTANCE REMOVABLE BLADDER ASME TANK, PRE-CHARGED TO 12 PSI.

A Heat Pump Designation	B Description	C Area (ft²) (Az)	D Area Outdoor Air Rate per VMC Table 403.3 (Ra)	E Area Outdoor Air (RaAz)	F Occupant Load Rate per VMC Table 403.3 (People/ 1000 ft2)	G Occupancy C x F1000 (Pz)	H Occupant Outdoor Air Rate per VMC Table 403.3 (Rp)	I Occupant Outdoor Air (RpPz)	J Breathing Zone Outdoor Air (Vbz = RpPz + RaAz)	K Zone Air Distribution Effectiveness (Ez)	L Zone Outdoor Air (Voz = Vbz / Ez)	M Supply Air Design (Vpz)	N Outdoor Air Percent (Zp = Voz / Vpz)	O Zone Outdoor Air Intake Rate (Voz = Voz)
HP-1	Bunk Rooms 4-6	360	0.06	22	0	3	5	15	37	0.8	47	300	16%	47
HP-3	Living	556	0.06	33	0	15	5	75	108	0.8	135	1200	11%	135
HP-4	Bunk Rooms 10-12	360	0.06	22	0	3	5	15	37	0.8	47	300	16%	47
HP-6	Supervisor Office	187	0.06	11	5	1	5	5	16	0.8	20	900	2%	20
HP-7	Offices	282	0.06	17	5	2	5	10	27	0.8	34	425	8%	34
HP-8	Lobby	315	0.06	19	30	10	5	50	69	0.8	87	1500	6%	87
HP-10	Basement - Stg	1580	0.12	190	0	0	0	0	190	0.8	238	1200	20%	238

A Room	B Description	C Area (ft²) (Az)	D Area Outdoor Air Rate per VMC Table 403.3 (Ra)	E Area Outdoor Air (RaAz)	F Occupant Load Rate per VMC Table 403.3 (People/ 1000 ft2)	G Occupancy C x F1000 (Pz)	H Occupant Outdoor Air Rate per VMC Table 403.3 (Rp)	I Occupant Outdoor Air (RpPz)	J Breathing Zone Outdoor Air (Vbz = RpPz + RaAz)	K Zone Air Distribution Effectiveness (Ez)	L Zone Outdoor Air (Voz = Vbz / Ez)	M Supply Air Design (Vpz)	N Outdoor Air Fraction (Zp = Voz / Vpz)
	Add Rows												
HP-2	Boys Restroom	228	0	0	0	0	0	0	0	0.8	0	200	0.000
	Corridor 1	200	0.06	12	0	0	0	0	12	0.8	15	60	0.250
	Bunk Room 1	120	0.06	7	0	1	5	5	12	0.8	15	85	0.176
	Bunk Room 2	120	0.06	7	0	1	5	5	12	0.8	15	85	0.176
	Bunk Room 3	120	0.06	7	0	1	5	5	12	0.8	15	85	0.176
			0	0	0		0	0	0	0.8	0	0.0001	0.000
			0	0	0		0	0	0	0.8	0	0.0001	0.000
			0	0	0		0	0	0	0.8	0	0.0001	0.000
Totals		788		33		3		15	48		60	515	0.250

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Do not utilize Occupant Diversity without specific approval from the Authority Having Jurisdiction

System Population (Ps): Diversity → 3

Occupant Diversity D = Ps/∑all zones Pz: 1.000

Uncorrected O.A. Vou = D ∑all zones RpPz + ∑all zones RaAz: 48

Total Required Outdoor Air: 54

Percentage of Outdoor Air: 10%

E_v: 0.9

A Room	B Description	C Area (ft²) (Az)	D Area Outdoor Air Rate per VMC Table 403.3 (Ra)	E Area Outdoor Air (RaAz)	F Occupant Load Rate per VMC Table 403.3 (People/ 1000 ft2)	G Occupancy C x F1000 (Pz)	H Occupant Outdoor Air Rate per VMC Table 403.3 (Rp)	I Occupant Outdoor Air (RpPz)	J Breathing Zone Outdoor Air (Vbz = RpPz + RaAz)	K Zone Air Distribution Effectiveness (Ez)	L Zone Outdoor Air (Voz = Vbz / Ez)	M Supply Air Design (Vpz)	N Outdoor Air Fraction (Zp = Voz / Vpz)
	Add Rows												
HP-5	Girls Restroom	265	0	0	0	0	0	0	0	0.8	0	200	0.000
	Corridor 2	279	0.06	17	0	0	0	0	17	0.8	22	60	0.367
	Bunk Room 7	120	0.06	7	0	1	5	5	12	0.8	15	85	0.176
	Bunk Room 8	120	0.06	7	0	1	5	5	12	0.8	15	85	0.176
	Bunk Room 9	120	0.06	7	0	1	5	5	12	0.8	15	85	0.176
			0	0	0		0	0	0	0.8	0	0.0001	0.000
			0	0	0		0	0	0	0.8	0	0.0001	0.000
			0	0	0		0	0	0	0.8	0	0.0001	0.000
Totals		904		38		3		15	53		67	515	0.367

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Do not utilize Occupant Diversity without specific approval from the Authority Having Jurisdiction

System Population (Ps): Diversity → 3

Occupant Diversity D = Ps/∑all zones Pz: 1.000

Uncorrected O.A. Vou = D ∑all zones RpPz + ∑all zones RaAz: 53

Total Required Outdoor Air: 68

Percentage of Outdoor Air: 13%

E_v: 0.78

A Room	B Description	C Area (ft²) (Az)	D Area Outdoor Air Rate per VMC Table 403.3 (Ra)	E Area Outdoor Air (RaAz)	F Occupant Load Rate per VMC Table 403.3 (People/ 1000 ft2)	G Occupancy C x F1000 (Pz)	H Occupant Outdoor Air Rate per VMC Table 403.3 (Rp)	I Occupant Outdoor Air (RpPz)	J Breathing Zone Outdoor Air (Vbz = RpPz + RaAz)	K Zone Air Distribution Effectiveness (Ez)	L Zone Outdoor Air (Voz = Vbz / Ez)	M Supply Air Design (Vpz)	N Outdoor Air Fraction (Zp = Voz / Vpz)
	Add Rows												
HP-9	Corridor 3	350	0.06	21	0	0	0	0	21	0.8	27	100	0.270
	Director	132	0.06	8	5	1	5	5	13	0.8	17	125	0.136
	File Room	140	0.06	8	0	0	0	0	8	0.8	10	75	0.133
	Large Conference	210	0.06	13	50	11	5	55	68	0.8	85	380	0.236
	Small Conference	120	0.06	7	50	6	5	30	37	0.8	47	125	0.378
	Janitor	82	0	0	0	0	0	0	0	0.8	0	60	0.000
	Laundry	110	0	0	0	0	0	0	0	0.8	0	175	0.000
			0	0	0		0	0	0	0.8	0	0.0001	0.000
			0	0	0		0	0	0	0.8	0	0.0001	0.000
			0	0	0		0	0	0	0.8	0	0.0001	0.000
			0	0	0		0	0	0	0.8	0	0.0001	0.000
Totals		1144		57		18		90	147		186	1020	0.376

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Do not utilize Occupant Diversity without specific approval from the Authority Having Jurisdiction

System Population (Ps): Diversity → 18

Occupant Diversity D = Ps/∑all zones Pz: 1.000

Uncorrected O.A. Vou = D ∑all zones RpPz + ∑all zones RaAz: 147

Total Required Outdoor Air: 191

Percentage of Outdoor Air: 19%

E_v: 0.77

A Room	B Description	C Area (ft²) (Az)	D Area Outdoor Air Rate per VMC Table 403.3 (Ra)	E Area Outdoor Air (RaAz)	F Occupant Load Rate per VMC Table 403.3 (People/ 1000 ft2)	G Occupancy C x F1000 (Pz)	H Occupant Outdoor Air Rate per VMC Table 403.3 (Rp)	I Occupant Outdoor Air (RpPz)	J Breathing Zone Outdoor Air (Vbz = RpPz + RaAz)	K Zone Air Distribution Effectiveness (Ez)	L Zone Outdoor Air (Voz = Vbz / Ez)	M Supply Air Design (Vpz)	N Outdoor Air Fraction (Zp = Voz / Vpz)
	Add Rows												
HP-11	Kitchen	270	0	0	0	0	0	0	0	0.8	0	200	0.000
	Pantry	150	0.06	9	0	0	0	0	9	0.8	12	50	0.240
	Recycling	125	0.06	8	0	0	0	0	8	0.8	10	60	0.167
	Mechanical Room	82	0	0	0	0	0	0	0	0.8	0	100	0.000
			0	0	0	0	0	0	0	0.8	0	0.0001	0.000
	Dining Room	634	0.18	114	0	32	7.5	240	354	0.8	443	3900	0.114
			0	0	0		0	0	0	0.8	0	0.0001	0.000
			0	0	0		0	0	0	0.8	0	0.0001	0.000
			0	0	0		0	0	0	0.8	0	0.0001	0.000
			0	0	0		0	0	0	0.8	0	0.0001	0.000
Totals		1261		131		32		240	371		465	4310	0.240

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Do not utilize Occupant Diversity without specific approval from the Authority Having Jurisdiction

System Population (Ps): Diversity → 32

Occupant Diversity D = Ps/∑all zones Pz: 1.000

Uncorrected O.A. Vou = D ∑all zones RpPz + ∑all zones RaAz: 371

Total Required Outdoor Air: 408

Percentage of Outdoor Air: 9%

E_v: 0.91

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N.	REVISION	DATE
1	ADDENDUM #1	5.12.2010

Loudoun Youth Shelter

Additions & Renovations

Meadowview Court
Leesburg

Sheet Title:

MECHANICAL SCHEDULES AND VENTILATION TABLES

Drawing Number:

M201

Issue Date: 4/29/2010

Drawn By: CADD
Checked By:

Project Number:
Project Number