

COLD CLIMATE HEAT PUMP OUTDOOR UNIT SCHEDULE - HPOU

UNIT ID	SERVICE	LOCATION	UNIT ELEC (VOLT/PHASE)	UNIT ELEC (MCA)	MAX OVER CURRENT RATING (A)	NOMINAL COOLING TOTAL CAP. (KBH)	COOLING SEER (BTU/W/h)	COOLING SHR (SENS. / TOTAL)	HEATING COP @ 47° F OAT	HEATING COP @ 17° F OAT	HEATING COP @ 5° F OAT	ADJUSTED HEATING MAX. CAP. @ 0° F OAT (KBH)	HSPF2 (IV) (BTU/W h)	MANUF. OR EQUAL	MODEL OR EQUAL	AHRI REFERENCE	REMARKS
HPOU-1	UNIT 1	SOUTH ELEV	240/1	17	31	18	18	0.92	3.6	2.6	1.7	16.5	9.2	MITSUBISHI	SUZ-KA18NAHZ		EFFICIENCYMAINE INCENTIVE
HPOU-2	UNIT 2	SOUTH ELEV	240/1	17	31	18	18	0.92	3.6	2.6	1.7	16.5	9.2	MITSUBISHI	SUZ-KA18NAHZ		EFFICIENCYMAINE INCENTIVE

COLD CLIMATE HEAT PUMP INDOOR UNIT SCHEDULE - HPIU

UNIT ID	LOCATION	SERVICE	AIR FLOW RATE (CFM)	EXT. STATIC SETTING (in WG)	FAN SPEED	UNIT VOLT/PHASE	UNIT ELEC (MCA)	NOM. MAX HEATING CAP @ 5°F OAT(KBH)	NOM. TOTAL CLG. CAP @ 95°F OAT (KBH)	*ADJ. HEATING CAP (KBH)	*ADJ. TOTAL COOLING CAP (KBH)	LIQ. LINE (IN)	GAS LINE (IN)	APPROX LINE LENGTH (FT)	MANUF. OR EQUAL	MODEL OR EQUAL	CONTROLS	REMARKS
HPIU-1	CRAWL SPACE 1	UNIT 1	560	0.5	MED.	240/1	3	21.6	18.0	16.6	15.7	1/4	1/2	48	MITSUBISHI	SVZ-KP18NA	PAC-USWHS002-2, MHK2	REHEAT COIL;
HPIU-2	CRAWL SPACE 2	UNIT 2	560	0.5	MED.	240/1	3	21.6	18.0	16.6	15.7	1/4	1/2	48	MITSUBISHI	SVZ-KP18NA	PAC-USWHS002-2, MHK2	REHEAT COIL;

SUPPLEMENTAL HEATING COIL - RHC

UNIT ID	LOCATION	SERVICE	AIR FLOW RATE (CFM)	MAX. DISCHRG AIR TEMP (°F)	MAX PRESS. DROP (IN. WG)	UNIT ELEC (VOLT/PHASE)	CURRENT (A)	CAP. (kW)	MCA (A)	MANUF. OR EQUAL	MODEL OR EQUAL	REMARKS
RHC-1	HPOU-1	SUPPLY AIR	600	200	0.05	240/1	12.5	5	26	MITSUBISHI	EH05-SVZ-S	SEPARATE POWER KIT (SPTB1); AUX HEAT LOCKOUT (ETC-211-20-MIT)
RHC-2	HPOU-2	SUPPLY AIR	580	200	0.05	240/1	12.5	5	26	MITSUBISHI	EH05-SVZ-S	SEPARATE POWER KIT (SPTB1); AUX HEAT LOCKOUT (ETC-211-20-MIT)

ENERGY RECOVERY VENTILATOR SCHEDULE - ERV

UNIT ID	LOCATION	SERVICE	FLOW RATE (CFM)	EXTERNAL STATIC PRESSURE (IN. WG)	UNIT ELEC (VOLT/PHASE)	UNIT ELEC (MCA)	MAX POWER (W)	EFFEC @ 32° F OAT (%)	MANUF. OR EQUAL	MODEL OR EQUAL	OPERATING WEIGHT (LBS)	REMARKS
ERV-1	CRAWL SPACE	UNIT 1	80	0.35	115/1	1.4	84	63	FANTECH	ATMO 150E	40	ECO-TOUCH; RTS-W BOOST TIMERS (2)
ERV-2	CRAWL SPACE	UNIT 2	80	0.35	115/1	1.4	84	61	RENEWAIRE	PREMIUM S	40	PBT OVERRIDE TIMER WITH ONE PBL

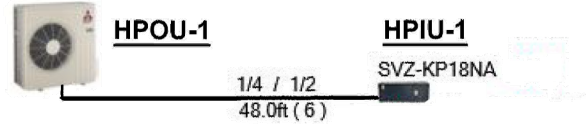
ELECTRIC FINNED TUBE RADIATION - EFTR

UNIT ID	LOCATION	UNIT ELEC (VOLT/PHASE)	MAX POWER (W)	LENGTH (IN)	MANUF. OR EQUAL	MODEL OR EQUAL	REMARKS
ETR-1	SEE DRWGS	240/1	300	20	STELPRO	AB0302	INTEGRAL DIGITAL THERMOSTAT, SIBTE13F
ERV-2	SEE DRWGS	240/1	500	28	STELPRO	AB0502	INTEGRAL DIGITAL THERMOSTAT, SIBTE13F

DIFFUSER, REGISTER AND GRILLE SCHEDULE

ID	LISTED SIZE	AIR FLOW RATE RANGE (CFM)	THROW @ TV75 (FT)	FACE VELOCITY (FPM)	SERVICE	MOUNTING	ACCESSORIES	MANUF / MODEL, OR EQUAL	REMARKS
SD-A	6" R	54 < x <= 95	3.5 - 4	< 700	SUPPLY AIR	CEILING	VOLUME DAMPER	HART AND COOLEY / 16	STEEL, PAINTED
SR-F0	2½ x 10"	<= 30	10	300 - 400	SUPPLY AIR	FLOOR	VOLUME DAMPER	HART AND COOLEY / 210	STEEL, PAINTED
SR-F1	4 x 10"	<= 70	10	300 - 400	SUPPLY AIR	FLOOR	VOLUME DAMPER	HART AND COOLEY / 210	
V-A	4" R	<= 20			VENTILATION SYSTEM SUPPLY AND RETURN	SIDEWALL OR CEILING		FANTECH CG4	
V-B	6" R	< 60			VENTILATION SYSTEM SUPPLY AND RETURN	SIDEWALL OR CEILING		FANTECH CG6	
RG-1	16" x 10"	< 360		450	RETURN AIR	SIDEWALL OR CEILING		HART AND COOLEY / 650	STEEL, PAINTED

SUZ-KA18NAHZ.TH



15,728 BTU/h (14,446 BTU/h) Est. Cooling Discharge Air Temp: 54.0
16,540 BTU/h Est. Heating Discharge Air Temp: 98.4

Correction Factors

Temperature: 0.98 0.81
Piping Length: 0.96 0.95
Defrosting: - 1.00
User Derate: 1.00 1.00
Total Derate: 0.94 0.77
Additional Refrigerant: 0.00 lb
Total Refrigerant Amount: 3.75 lb

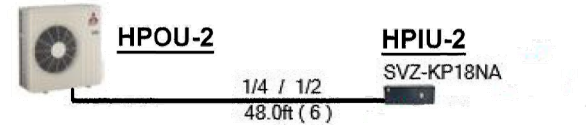
Conditions (°F)

Cooling
Indoor DB 74 Humidity 51.2 % Indoor WB 62.0
Outdoor DB 90.0

Heating

Indoor DB 72
Outdoor DB 0.0 Humidity 79.0% Outdoor WB -0.5

SUZ-KA18NAHZ.TH



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Heating

Indoor DB 72
Outdoor DB 0.0 Humidity 79.0% Outdoor WB -0.5

**HEAT PUMP SYSTEMS
NTS**

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Palermo, ME 04354

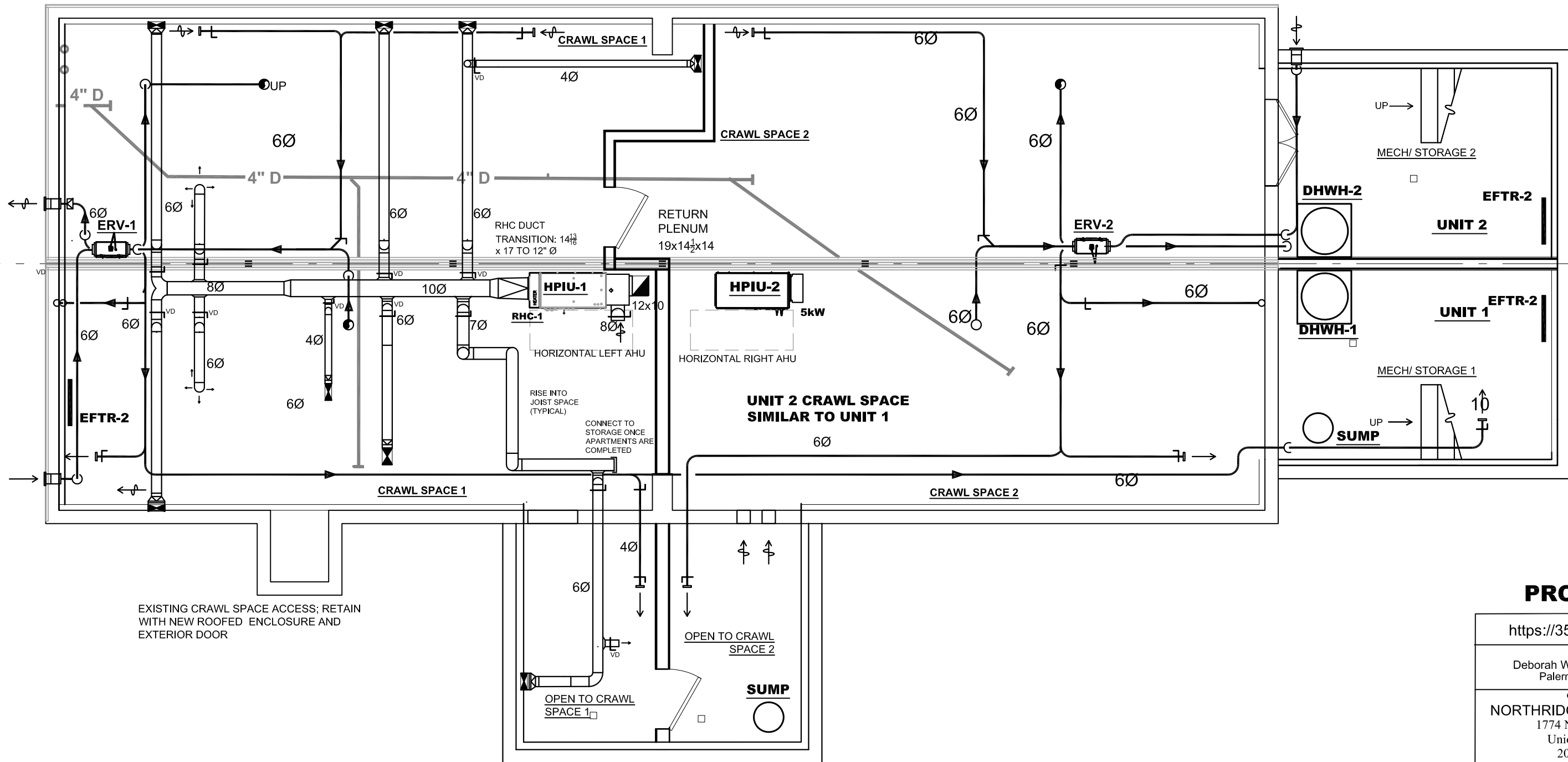
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207-593-6089

HVAC Design and Implementation
OCTOBER ENGINEERING LLC
Palermo, ME 04354
207-649-0505

ENERGY RETROFIT AND ELECTRIFICATION
358 High Street
Belfast, ME 04915

HVAC SCHEDULES

11-05-2024 **H-1**
1 of 7



CRAWL SPACE FLOOR PLAN

SCALE: $\frac{3}{16}" = 1'0"$ (11x17)

PROGRESS

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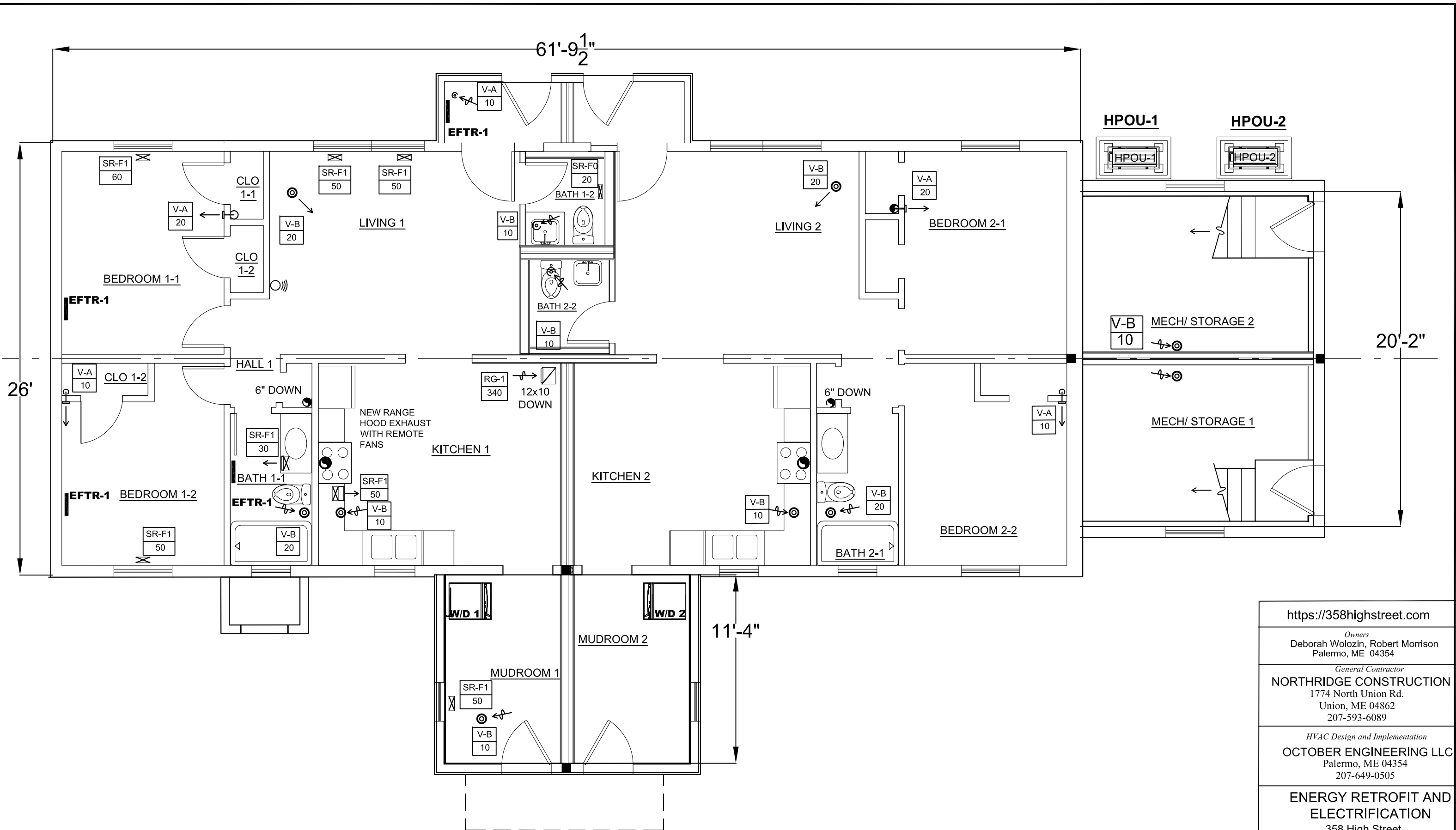
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CRAWL SPACE PLAN

11-05-2024

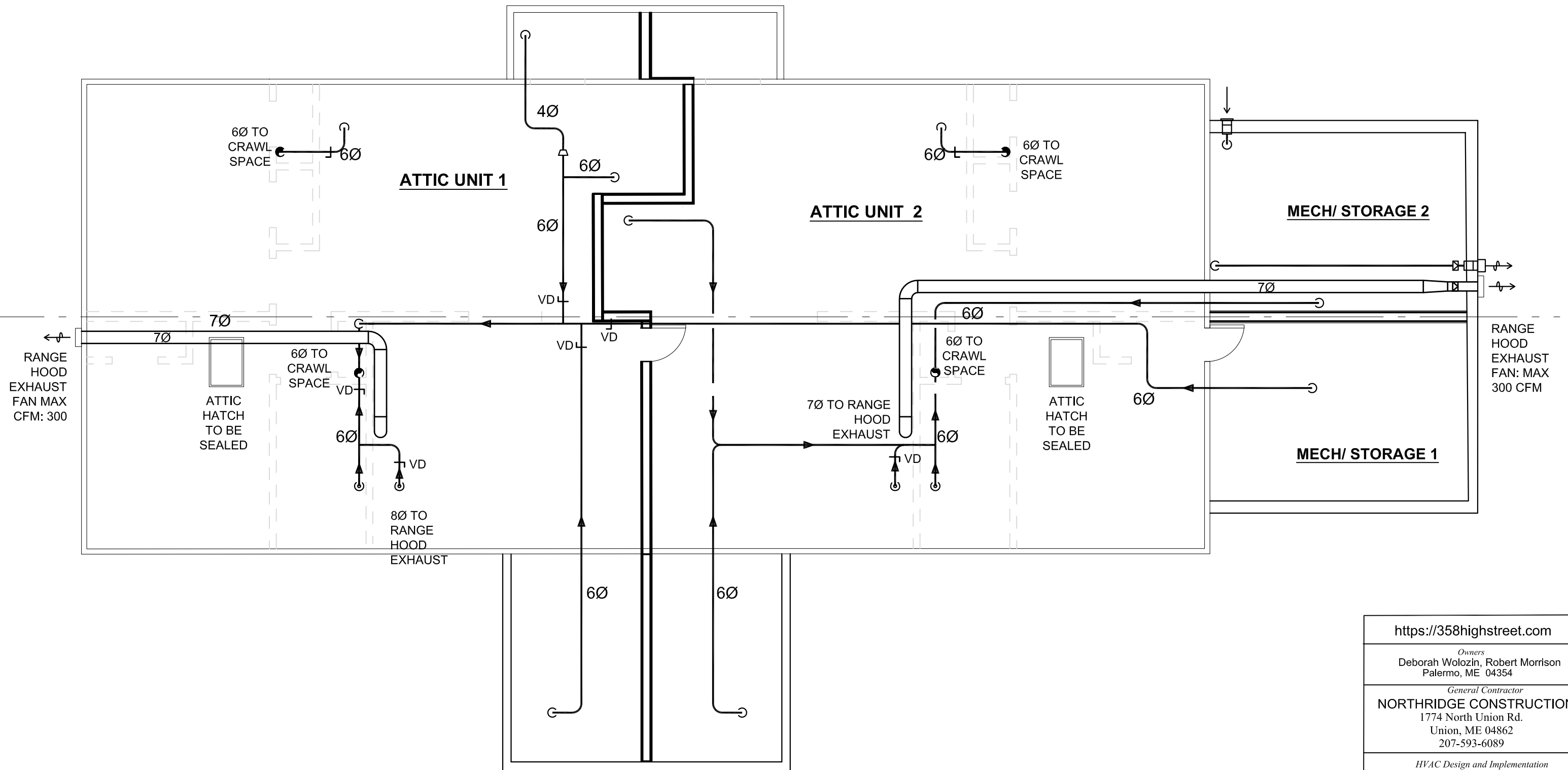
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FIRST FLOOR PLAN

SCALE: $\frac{3}{16}'' = 1'0''$ (11x17)

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<i>General Contractor</i> NORTHBRIDGE CONSTRUCTION 1774 North Union Rd. Union, ME 04862 207-593-6089	
<i>HVAC Design and Implementation</i> OCTOBER ENGINEERING LLC Palermo, ME 04354 207-649-0505	
ENERGY RETROFIT AND ELECTRIFICATION 358 High Street Belfast, ME 04915	
FIRST FLOOR PLAN	
11-05-2024	H-3 3 of 7



ATTIC LEVEL PLAN

SCALE: $\frac{3}{16}'' = 1'0''$ (11x17)

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ATTIC PLAN

10-10-2024

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Project Report

General Project Information
 Project Title: 358 High Street Belfast, ME 04915
 Designed By: October Engineering LLC
 Project Date: 12/17/2023, 03-11-24, 07-31-24
 Project Comment: Includes the added spaces and the over-DER. New entry faces north
 Brunswick design data permit submission: 04-03-2024
 Client Name: Morrison / Wolozin
 Client Address: 2000 Level Hill Road
 Client City: Palermo, ME 04354
 Client Phone: 207-649-0505
 Client E-Mail Address: rim@octoberengineering.com
 Company Name: October Engineering LLC
 Company Representative: Robert Morrison, PE
 Company Comment:

Design Data
 Reference City: Belfast, ME - modified
 Building Orientation: Front door faces North
 Daily Temperature Range: Medium
 Latitude: 44 Degrees
 Elevation: 333 ft.
 Altitude Factor: 0.988

	Outdoor Dry Bulb	Outdoor Wet Bulb	Outdoor Rel.Hum	Indoor Rel.Hum	Indoor Dry Bulb	Grains Difference
Winter:	-2	-2.56	n/a	n/a	72	n/a
Summer:	92	70	33%	50%	74	13

Check Figures
 Total Building Supply CFM: 651 CFM Per Square ft.: 0.177 *
 Square ft. of Room Area: 3,675 Square ft. Per Ton: 2,372 **
 Volume (ft³): 24,612
 * Based on area of rooms being heated or cooled (whichever governs system) rather than entire floor area.
 ** Based on area of rooms being cooled.

Building Loads
 Total Heating Required Including Ventilation Air: 26,978 Btuh 26.978 MBH
 Total Sensible Gain: 14,772 Btuh 81 %
 Total Latent Gain: 3,466 Btuh 19 %
 Total Cooling Required Including Ventilation Air: 18,238 Btuh 1.52 Tons (Based On Sensible + Latent)

Notes
 Rhvac is an ACCA approved Manual J, D and S computer program. Calculations are performed per ACCA Manual J 8th Edition, Version 2.50, and ACCA Manual D. All computed results are estimates as building use and weather may vary. Be sure to select a unit that meets both sensible and latent loads according to the manufacturer's performance data at your design conditions.

Load Preview Report

Scope	Has AED	Net Ton	ft² /Ton	Area	Sen Gain	Lat Gain	Net Gain	Sen Loss	Sys Htg CFM	Sys Clg CFM	Sys Act CFM	Duct Size
Building		1.52	2,372	3,675	14,772	3,466	18,238	26,978	651	651	651	
System 1 Unit 1 All Areas	No	0.8	2,261	1,838	7,656	1,910	9,566	13,723	338	338	338	10
Ventilation					548	685	1,233	2,252	80	80	80	
Zone 1 - Clg.: 84%, Htg.: 59%				865	7,357	1,225	8,582	6,724	198	338	338	10
3-Bedroom 1-1				140	1,589	400	1,989	1,082	32	73	73	1-6
5-Bedroom 1-2				120	981	400	1,381	1,021	30	45	45	1-5
7-Living 1				215	2,412	200	2,612	1,712	50	111	111	2-6
9-Bath 1-1				45	341	0	341	262	6	16	16	1-4
11-Kitchen 1				190	1,252	200	1,452	947	28	58	58	1-6
14-Bathroom 1-2				35	0	0	0	208	6	0	0	0-0
15-Mud Room 1				90	486	25	511	818	24	22	22	1-4
21-21 Rear Entry 1				30	297	0	297	674	20	14	14	1-4
Zone 2 - Clg.: 16%, Htg.: 41%				972	1,451	0	1,451	4,747	140	67	67	6
1-Unit 1 Crawl Space (East)				752	283	0	283	2,565	76	13	13	1-4
17-Mechanical Room 1				140	928	0	928	1,717	51	43	43	1-5
19-Crawl Space - Mudroom 1				80	240	0	240	465	14	11	11	1-4
System 2 Unit 2 All Areas	No	0.72	2,494	1,838	7,116	1,555	8,671	13,255	313	313	313	10
Ventilation					548	685	1,233	2,252	80	80	80	
Zone 1 - Clg.: 82%, Htg.: 57%				865	6,812	820	7,632	6,255	178	313	313	10
4-Bedroom 2-1				140	1,308	200	1,508	900	26	60	60	1-6
6-Bedroom 2-2				120	694	200	894	835	24	32	32	1-5
8-Living 2				215	2,422	200	2,622	1,712	49	111	111	2-6
10-Bath 2-1				45	343	0	343	263	7	16	16	1-4
12-Kitchen 2				190	1,257	200	1,457	947	27	58	58	1-6
13-Bathroom 2-2				35	0	0	0	106	3	0	0	0-0
16-Mud Room 2				90	488	20	508	818	23	22	22	1-4
22-21 Rear Entry 2				30	298	0	298	674	19	14	14	1-4
Zone 2 - Clg.: 18%, Htg.: 43%				972	1,457	50	1,507	4,748	135	67	67	6
2-Unit 2 Crawl Space (West)				752	284	0	284	2,565	73	13	13	1-4
18-Mechanical Room 2				140	932	0	932	1,718	49	43	43	1-5
20-Crawl Space - Mudroom 2				80	241	50	291	465	13	11	11	1-4
Sum of room airflows may be greater than system airflow because system has multiple zones.												

Total Building Summary Loads

Component Description	Area Quan	Sen Loss	Lat Gain	Sen Gain	Total Gain
Win358Retro: Glazing-Mathews Brothers, 3-P, heat absorbing, Argon, outdoor insect screen with 50% coverage, U-value 0.22, SHGC 0.45	184.9	3,008	0	3,316	3,316
Door358HighStreet: Door-exterior door, new, R=4 overall, U-value 0.25	168	3,112	0	1,216	1,216
WallAG-358-retro: Wall-Frame, Custom, R=34: above-grade wall, new, additions, continuous insulation 2" polyiso	1760	3,912	0	1,047	1,047
WallBG-Retro: Wall-Basement, Custom, Below grade, retrofit, existing 1" XPS, add 2" SPF in 2x4 cavity, U-value 0.053, above grade U-value 0.053	1118.4	4,378	0	804	804
Roof-358-retro: Roof/Ceiling-Roof Deck (roofing, wood, insulation) or SIP Panels Supported on Beams, Custom, R=70: existing attic floor, 9" fiberglass batt, new 4" cavity ccSPF, new 3" continuous polyiso, U-value 0.014	1670	1,730	0	562	562
Roof-358-new: Roof/Ceiling-Roof Joists Between Roof Deck and Ceiling or Foam Encapsulated Roof Joists, Custom, R=59.5, 4" polyiso on deck, 5" spf in rafter cavities, U-value 0.017	345.6	434	0	148	148
FirPart358: Partition Floor (STD=0, WTD=4)-Over enclosed crawl space, Custom, Occupied floor over sealed crawl space with walls insulated with ccSPF, R= 20, U-value 0.5	1490	2,980	0	0	0
FirRearEntry358: Floor-Over open crawl space or garage, Custom, retrofit under existing floor of existing (south) entries: R=25, U-value 0.042	60.1	188	0	32	32
CS-SlabFir: Floor-Basement, Custom, crawl space and below grade concrete floor, dimple mat, 1" XPS, 3/4" Advantech, U-value 0.019	1944.9	2,734	0	0	0
Subtotals for structure:		22,474	0	7,125	7,125
People:	8		1,600	1,840	3,440
Equipment:			495	2,192	2,687
Lighting:	630			2,148	2,148
Ductwork:		0	0	0	0
Infiltration: Winter CFM: 0, Summer CFM: 0		0	0	0	0
Ventilation: Winter CFM: 160, Summer CFM: 160		4,504	1,371	1,096	2,466
AED Excursion:		0	0	371	371
Total Building Load Totals:		26,978	3,466	14,772	18,238

Check Figures
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HVAC LOADS

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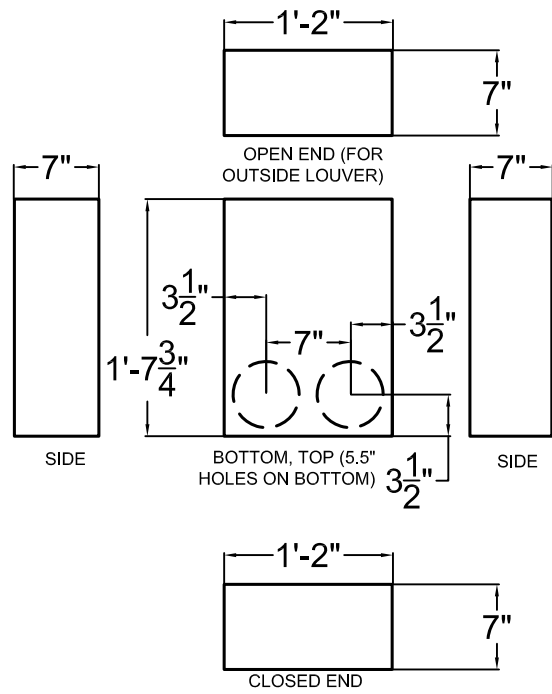
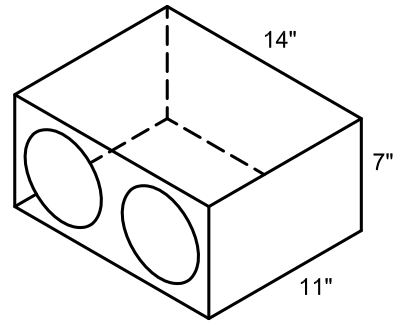
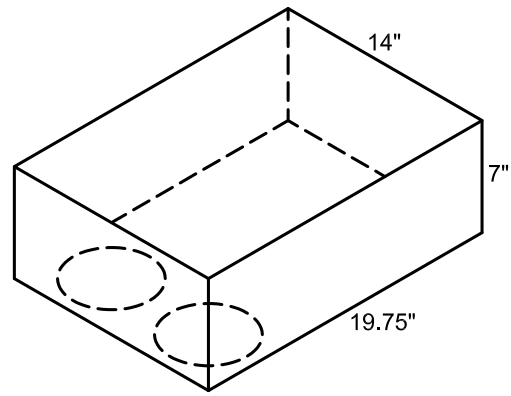
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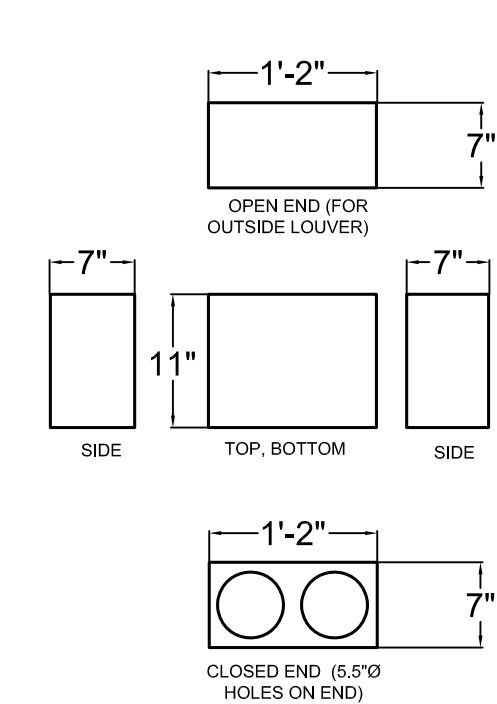
HVAC LOADS

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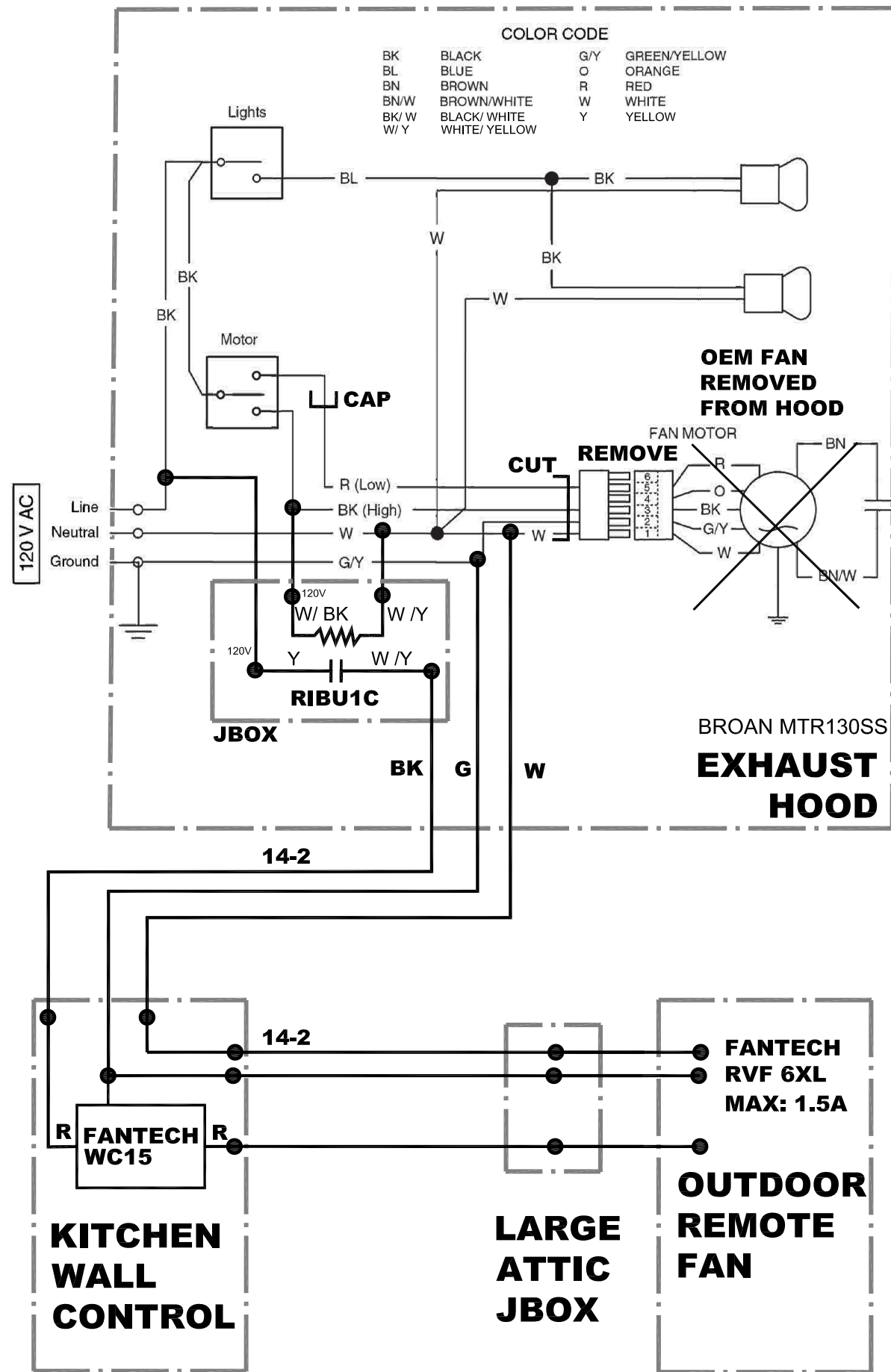
H-5
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ERV OUTSIDE AIR INTAKE PLENUM EAST SIDE
SCALE: $\frac{3}{4}$ " = 12"



ERV OUTSIDE AIR INTAKE PLENUM SOUTH SIDE
SCALE: $\frac{3}{4}$ " = 12"



RANGE HOOD EXHAUST FAN SCHEMATIC
NOT TO SCALE

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DETAILS 1