THE HORSEFLY COMMUNITY CLUB

5772 Horsefly Road
P.O. Box 179
Horsefly, BC, V0L 1L0
horseflycc@gmail.com

Aug 1, 2025

Re: Request for Funding Support – Horsefly Community Hall Roof Replacement and Insulation Project

Dear Mr. Campbell,

The Horsefly Community Club respectfully requests funding support from the Community Works Fund for our roof and insulation upgrade project at the Horsefly Community Hall. This project is a critical first step in a broader energy efficiency initiative that will reduce operating costs, enhance emergency preparedness, and extend the life of our well-used community facility.

Project Background and Urgency

Built in 1955, the Horsefly Community Hall is the cultural and emergency response hub for our rural community of approximately 700 year-round residents. Over the years, the hall has undergone several additions, but the original roof — constructed with rough-sawn 2x8s and insulated with planer shavings and six inches of fiberglass — has never been replaced. A roof inspection conducted in December 2024 revealed approximately 12 holes in the main roof large enough to allow visible daylight and numerous compromised seams. In addition, the roof lacks any underlay, leaving the insulation vulnerable to moisture and degradation.

The ceiling has been identified as a major source of heat loss. However, adding insulation alone would provide limited benefit unless paired with replacement of the roof. Therefore, replacing the roof is the most urgent component of the overall energy efficiency plan. Without it, any insulation upgrades risk being ineffective or quickly damaged.

Project Scope and Cost

The total estimated cost for replacing the roof and installing additional insulation is $52,698.80 plus applicable taxes. We have selected a competitive quote from Weatherby's Roofing and

Sheet Metal, a local company based in 150 Mile House, offering superior materials (Pro-Loc panels) and installation features, including:

- Complete removal of existing metal roofing and substrate inspection
- Ice and water membrane installation (lower 6 feet) and synthetic felt underlay
- 26-gauge Pro-Loc metal panels with hidden fasteners and all required flashings
- Cobra venting at ridge and new plumbing boots
- Snow guards for lower roof protection and safety

In addition, the project includes:

- Purchase and delivery of 135 bales of Sopra-Cellulose insulation
- Rental of a blower for installation
- Volunteer installation labour by Horsefly Community Club members

Benefits of the Project

This upgrade will:

- Improve the ceiling insulation value from R-18.86 to R-40
- Cut annual heat loss by over 50%
- Prevent future water and air infiltration
- Reduce heating costs and energy use
- Extend the life and safety of the building
- Enable the hall to continue serving as an emergency response centre

Looking Ahead

This project is part of a larger vision to modernize the hall with further energy upgrades, including heat pumps, solar panels, new doors and windows, and improved wall insulation. While these additional elements will be pursued as funds become available, the roof replacement is foundational and must come first.

Funding and Contributions

The Horsefly Community Club has secured approximately $7,000 in reserve funds and expects to raise another $20,000–$25,000 in the next year. We are actively pursuing additional funding, including an application to the Northern Development Initiative Trust and exploring energy rebates and interest-free financing.

We deeply appreciate the CRD's continued support and respectfully request your contribution toward this most critical and time-sensitive component: the roof replacement. Please feel free to contact us with any questions or for further details about this project or our community programming.

Sincerely,

Tanya Tervit
President, Horsefly Community Club
horseflycc.president@gmail.com
[redacted]

2025/2/15

Horsefly Community Hall heat load analysis

Summary:

The Community Hall was very sturdily built, mostly using rough-sawn 2x8s. It is insulated with planer shavings, with six inch fiberglass overhead. The floor system appears to be uninsulated, as expected.

I've calculated the R-values of the Main Floor components: walls, ceiling and floor. They are -

walls- R-20.01   ceiling- R-18.86   floor- R-4.70

I have calculated the total heat load on the furnace system at six ambient (outdoor) temperatures, +10, 0, -10, -20, -30 and -40C. In all cases the target indoor temperature is 21C.

To sum up the following three pages of calculations,

1) Replacing the existing double-glazed R-2.1 windows with standard triple-glazed, low-e, argon filled windows (R-5.5) will reduce the total heat load by only 1.9% at an outdoor temperature of -20C. Total heating load would be reduced from approximately 93,000 Btu/hr to 92,000 Btu/hr, a savings that would amount to just five cents per hour. This would not be cost-effective.

2) Adding six inches of blow-in cellulose insulation across the entire attic, which will settle 12% to five and a half inches, will add another R-20. This will reduce the heat loss through the ceiling by half. However, this only amounts to a 6% savings overall, not negligible but certainly not spectacular. It *is* a very affordable upgrade; a 25lb bale retails for about $16 and would cover about thirty-six square feet.

3) Overcoming air infiltration and exfiltration is, by far, the single greatest challenge for the heating system. This amounts to 56-63% of total heating load.

The main focus of any remedial work should be the air-sealing of the building. The back-stage areas and the so-called 'chair room' behind the wheelchair bathroom were never finished back in 1955. They are planked with ordinary, very drafty shiplap. As a result, the cold air can easily be felt sweeping across the main floor on a cold day, whether the furnace is running or not. Both areas should be clad in foamboard, carefully detailed and drywalled. The shiplap could be first removed before any upgrading work is done, although the labour involved may not be worthwhile.

5) A properly weatherstripped exterior door should be installed leading up the stairs to the sound booth. The sound booth door should be carefully weatherstripped.

The exterior doors are quality doors but were installed by well-meaning amateurs. They need a lot of attention as they are a significant source of air infiltration.

The recessed ceiling lights are not airtight and can be boxed in with homemade foamboard enclosures. I've done this myself in the past with great success.

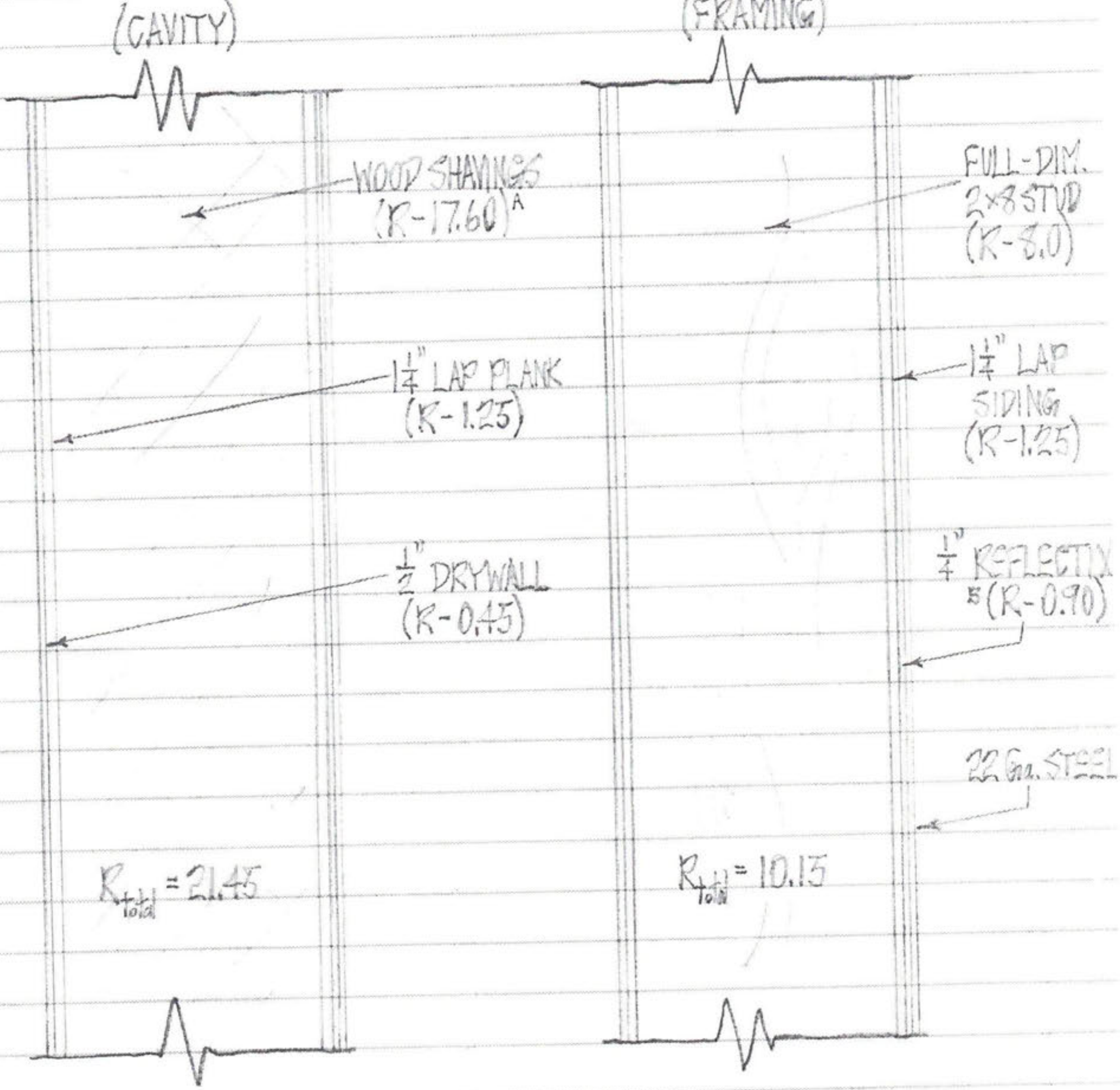
The furnaces should be provided with outside combustion air, which can fairly easily be pulled from under the front porch. At present they depressurize the building and make the cold drafts worse.

I have a new thermal imaging camera on order. If you need more careful analysis of the building's thermal envelope and calculations of heating system requirements, feel free to call me anytime.

Paul Hearsey

[redacted]

Community Hall wall assembly 2025/2/5



$R_{effective} = 0.85(21.45) + 0.15(11.85)$ assuming mean solidity of assembly is 15% (studs 16" O.C.)

$= \underline{20.01}$

* Where insulation on main floor has settled (32 inches) calculated R-value is just 5.05

A Efficiency Manitoba https://efficiencymb.ca B National Research Council www.nrc.ca

Building heat load calculations

2025/2/6

$Q = (A/R)\Delta T$ where Q = rate of heat transfer through the assembly (Btu/hr)
A = area of assembly - wall, ceiling etc. (ft²)
R = R-value of entire assembly (°F·ft²·hr/Btu)
ΔT = temperature difference between interior and exterior (°F)
- standard interior temperature is 70°F (21°C)

Heat losses through main floor wall assembly, calculated at an R-value of 20.0

		(50°F)	(32°F)	(14°F)	(-4°F)	(-22°F)	(-40°F)
	outdoor ambient -	+10°C	0°C	-10°C	-20°C	-30°C	-40°C
	Btu/ft² -	1.0	1.9	2.8	3.7	4.6	5.5
R-20.01	walls (3,334 ft²) -	3.33k	6.33k	9.34k	12.34k	15.34k	18.34k
R-18.86	ceilings (2,986 ft²) -	3.17k	6.02k	8.87k	11.72k	14.57k	17.42k
R-4.70	Floors - (2,962 ft²) -	12.60k	12.60k	12.60k	12.60k	12.60k	12.60k
		19.10k	24.95k	30.81k	36.66k	42.51k	48.36k Btu/hr

Infiltration heat losses, main floor -

$Q_i = 0.018 NV\Delta T$ where constant is the heat capacity of air (Btu/ft³/°F)
N = estimated air changes per hour (based on published ASHRAE data) = 1.6
V = volume of heated space (ft³)
ΔT = temperature difference between interior and exterior (°F)

	+10°C	0°C	-10°C	-20°C	-30°C	-40°C
outdoor ambient -	+10°C	0°C	-10°C	-20°C	-30°C	-40°C
V = 42,200 ft³	24.31k	28.86k	42.54k	56.21k	69.88k	83.56k Btu/hr
total heating loss -	43.41k	53.81k	73.35k	92.87k	112.39k	131.92k Btu/hr
infiltration as % of THL -	56%	54%	58%	61%	62%	63%

Proposed window upgrade 2023/2/8.

Main floor - 6 on main, add'l 4 behind stage 22"×54" = 8.25 ft² ea

Heat loss through 1 unit at, say, -20C - $(A/R)\,\Delta T = (8.25/2.1)\times 74 = 291$ Btu/hr

291 Btu/hr × 6 windows = 1,744 Btu/hr

total heating load @ -20C is calculated to be 93k Btu/hr

∴ window losses ≈ 1.9% of total.

Suppose existing windows (R-2.1) are upgraded to triple-glazed, sun-stop, low-e, argon-filled units

new windows R-5.5 heat loss $6\times(8.25/5.5)\times 74 = 666$ Btu/hr

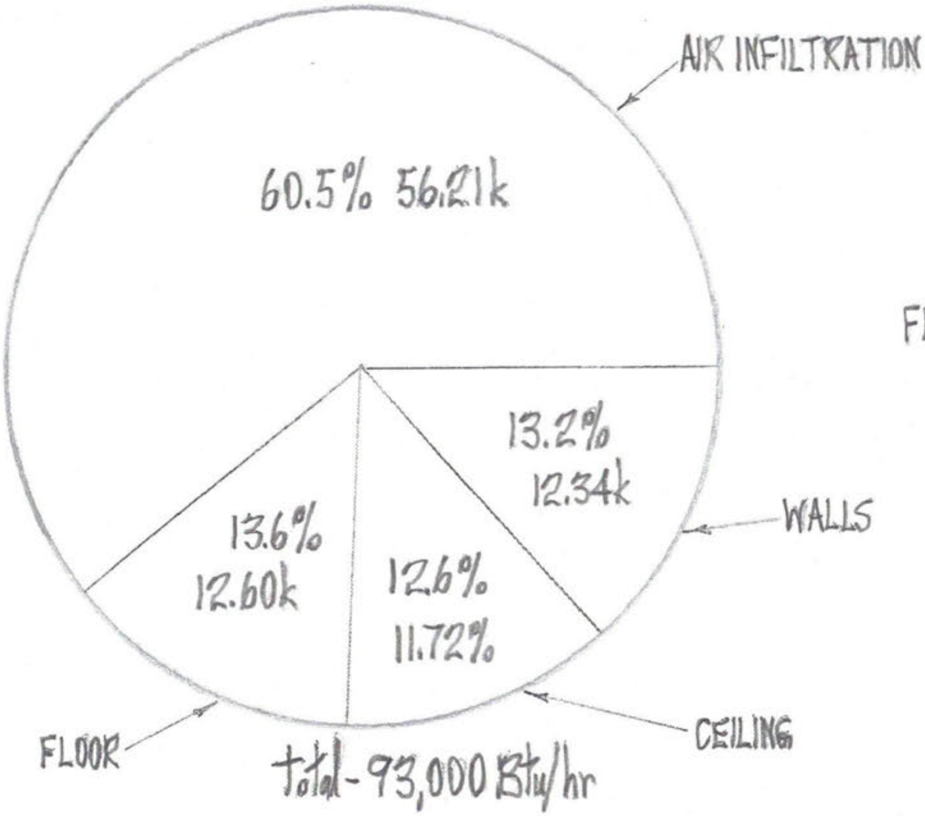
heat loss savings 1,744 - 666 = 1,078 Btu/hr @ $4.83/100k = 5.2¢/hr.[A]

∴ at -20°C, total heating load is reduced from 93k Btu/hr to 92k Btu/hr

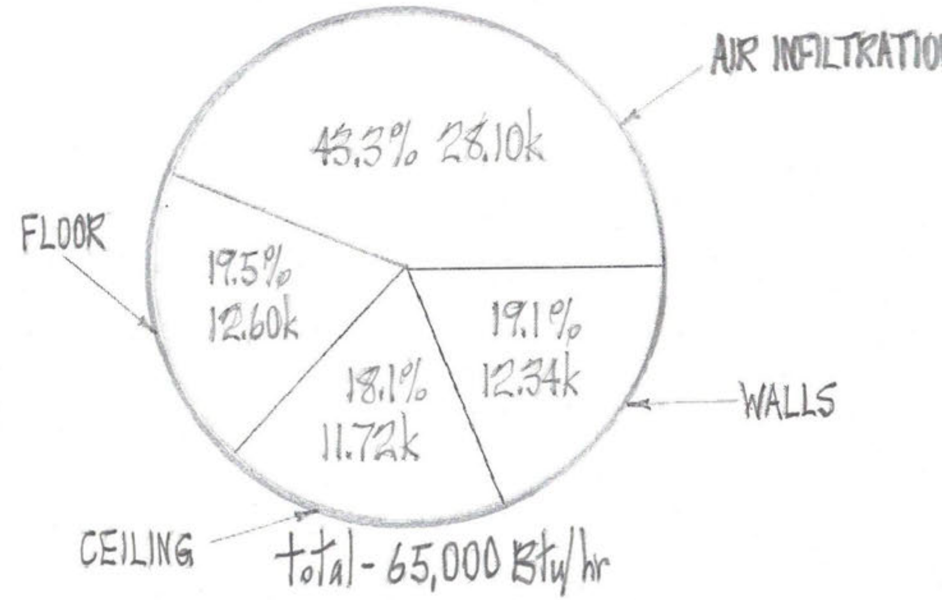
[A] #2 fuel oil is typically rated at 36,500 Btu/liter.
- at 85% furnace efficiency, yield is 31,025 Btu/liter
- at, say, $1.50/liter, 100,000 Btus cost $4.83

Existing Olsen (basement) furnace rated at 117k Btu/hr (dated 1997)
Lennox (main floor) furnace 113k Btu/hr

NOW



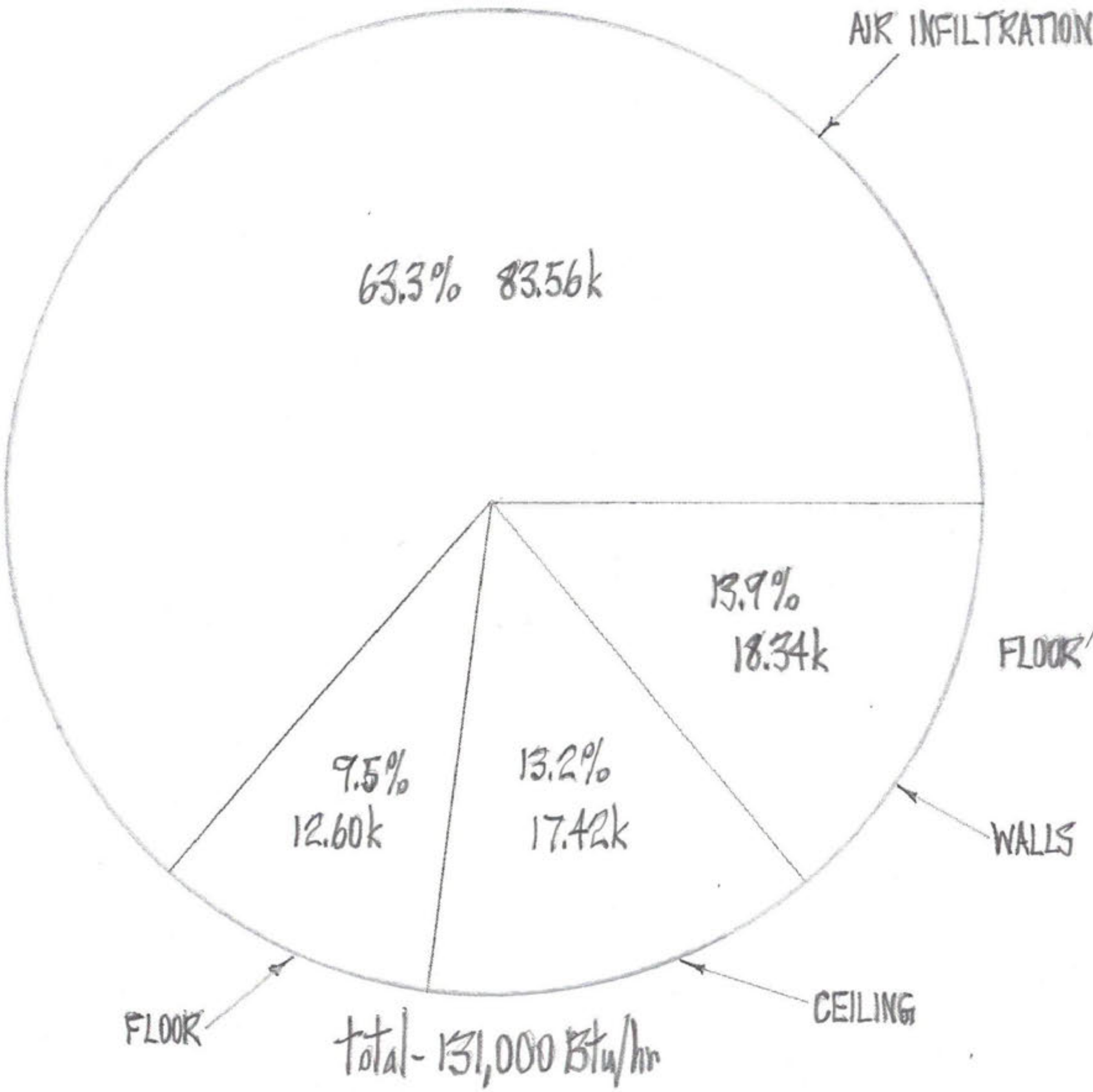
AFTER REDUCING INFILTRATION
FROM 1.6 ACH TO 0.5 ACH



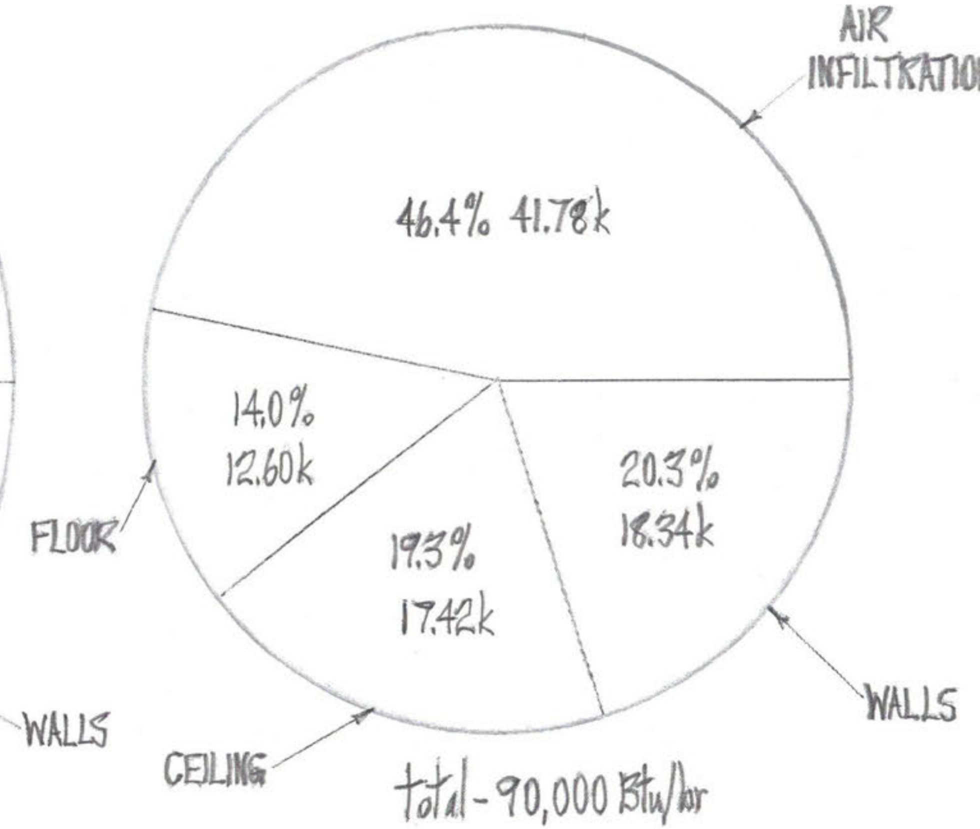
HORSEFLY COMMUNITY HALL heating load calculated for 21°C interior and -20°C exterior.

2025/2/15

NOW



AFTER REDUCING INFILTRATION
FROM 1.6ACH TO 0.5ACH



HORSEFLY COMMUNITY HALL heating load calculated for 21°C interior and -40°C exterior.

2025/2/15