Hydronic Heat: Submission Requirements for a House

This document outlines the requirements when applying for a Building Permit, as well as the associated review, inspection, and approval protocols for all new installation of hydronic heating systems within a House, including a House that contains a Secondary Dwelling Unit as defined by the Ontario Building Code. The application is divided into four Applications. The design and installation of hydronic heating systems is governed by, and must comply with, CAN/CSA-B214, "Installation Code for Hydronic Heating Systems." The B214 Code also provides a reference point that proper installation of heating systems will lead to good performance, serviceability and longevity.

APPLICATION 1:
The Hydronic Heating is in an **accessory building**

Design Requirement

No qualifications required

Submission Requirement

Plans must indicate:

1. Source of heat (Boiler, water heater, heat exchanger, solar)
2. Whether the system is connected to City/potable water and, if so, provide confirmation of backflow prevention and individual fixture protection.
3. The Hydronic Heating system must be protected from freezing.
4. Plumbing Permit may be required.

Inspection Requirements

1. Final Plumbing Report required to be provided by Lambton County (if Plumbing Permit has been issued

APPLICATION 2:
The Hydronic Heating is the Subsidiary Source of Heat and the area of proposed hydronic heat **does not exceed 55 sq** m in cumulative area

Design Requirement

1. An Individual who holds the HVAC House qualification, or
2. An individual who holds the Building Services qualification, or
3. A professional engineer licensed to practice in the province of Ontario

Submission Requirements

The plans and specifications submitted should include the following information:

1. Schedule 1: Designer Information Form
2. Ventilation design and layout for when the Hydronic heating system is the only source of heat.
3. R-value of insulation below slab
4. Source of heat (Boiler, water heater, heat exchanger, solar)
5. whether the system is connected to City/potable water and, if so, provide confirmation of backflow prevention and individual fixture protection.
6. Plumbing Permit may be required.

Inspection Requirements

1. Below slab insulation and loop layout inspection, prior to covering.
2. Final plumbing inspection report from Lambton County (if Plumbing Permit has been issued).

APPLICATION 3:

The Hydronic Heating is the Subsidiary Source of Heat and the area of proposed hydronic heat **exceeds 55 sq** m in cumulative area.

Design Requirement

1. An Individual who holds the HVAC House qualification, or
2. An individual who holds the Building Services qualification, or
3. A professional engineer licensed to practice in the province of Ontario

Design and installation shall be in accordance with CAN/CSA-B214 or as per 6.2.1.1 for the appropriate circumstance.

Submission Requirements

The plans and specifications submitted should include the following information:

1. Schedule 1: Designer Information form
2. The schematic arrangement of the system and the equipment specifications including, but not limited to: Source of heat (Boiler, water heater, heat exchanger, solar), layout, closed or open loop, manifolds, circulator, pumps, air expansion tanks, zone controls, mixing valves, backflow preventor and individual fixture protection, make up water connection to city services/potable water, and other system components.
3. R-value of insulation below slab.
4. Ventilation design and layout for when the Hydronic heating system is the only source of heat.
5. Residential Ventilation Design Summary form
6. The Hydronic Heating system must be protected from freezing.
7. Plumbing Permit may be required.
8. Coordination of design with all other disciplines (ie, rebar, tube diameter and concrete coverage does not exceed slab thickness.)

Inspection Requirements

1. Below-Slab insulation inspection. All radiant under-floor systems shall have insulation installed on the underside of the tubing.
2. Inspection of loop layout prior to covering. An Air/Pressure test will be required at the time of inspection on all in-floor systems. As per section 4.5.1 of the standard, the pressure test shall be tested with 420 kPa (60 psi) or 1.5 times the operating pressure for at least 1 hour.
3. Final Plumbing report from Lambton County (if Plumbing Permit has been issued)

APPLICATION 4:
The Hydronic Heating is the **Primary Source of Heat**

Design Requirement

1. An Individual who holds the HVAC House qualification, or
2. An individual who holds the Building Services qualification, or
3. A professional engineer licensed to practice in the province of Ontario

Design and installation shall be in accordance with CAN/CSA-B214 or as per 6.2.1.1 for the appropriate circumstance.

Submission Requirements

The plans and specifications submitted should include the following information:

1. Schedule 1: Designer Information form
2. Heat-loss/Heat-gain calculations
3. Residential Ventilation Design Summary form.
4. Ventilation duct design and layout
5. The schematic arrangement of the system and the equipment specifications including, but not limited to: Source of heat (Boiler, water heater, heat exchanger, solar), layout, closed or open loop, manifolds, circulator, pumps, air expansion tanks, zone controls, mixing valves, backflow preventor and individual fixture protection, make up water connection to city services/potable water, and other system components.
6. Piping specifications, spacing, sizes, maximum loop lengths, and support details.
7. Floor plans showing a general layout of the piping loops required for each room or space and the location of the main headers, if applicable
8. R-value of insulation below slab
9. The designed floor surface temperature
10. Coordination of design with all other disciplines (ie, rebar, tube diameter and concrete coverage does not exceed slab thickness.)
11. Plumbing Permit may be required.

Inspection Requirements

1. Below-Slab insulation inspection. All radiant under-floor systems shall have insulation installed on the underside of the tubing.
2. Inspection of loop layout prior to covering. An Air/Pressure test will be required at the time of inspection on all in-floor systems. As per section 4.5.1 of the standard, the pressure test

shall be tested with 420 kPa (60 psi) or 1.5 times the operating pressure for at least 1 hour.

3. Final Plumbing report from Lambton County (if Plumbing Permit has been issued)