



# Building Information

BURNABY PLANNING AND BUILDING DEPARTMENT

## Heating System Permits

The purpose of this brochure is to provide owners and builders with information regarding the City of Burnaby's requirements for heating system permits for dwelling units with individual, self contained heating systems.

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*"This information is provided for convenience only and is not in substitution of applicable City Bylaws or Provincial or Federal Codes or laws. You must satisfy yourself that any existing or proposed construction or other works complies with such Bylaws, Codes or other laws."*

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### Heating System Permits

Prior to the installation of any heating system in single or two family dwellings or townhouses or in multifamily units that have individual, self contained heating systems for each dwelling unit, the City of Burnaby will require contractors to apply for and obtain heating system permits from the City's Building Department.

### Submission requirements

#### General Requirements

**Building Permit** applicants must now submit a heat load worksheet, an appliance selection worksheet, manufacturer's furnace specifications and blower performance data before a building permit will be issued for the construction of single and two family dwellings using forced air heating systems. A revision fee will be charged for making changes to the heating system after the building permit is issued.

Heat load calculations **must be done on a room by room basis**, using one of the recognized methods of calculation.

In addition to the submission requirements listed above, forced air **heating permit** applicants must also submit supply and return air system layout and summary sheets 72 hours prior to the first heating inspection and the work cannot be covered up without an inspection.

## Hydronic Systems

Hydronic systems must be designed either to the latest edition of "Guidelines for the Design and Installation of Hot Water Heating Systems", ASHRAE, IBR, CSA B214-01 or other standard recognized by the Building Inspector or under the design supervision of a professional engineer.

The following documentation, duly signed, will be required for submission as part of the application for a heating permit.

1. Appliance Selection Worksheet;
2. Heat Loss Summary Sheet;
3. Hydronic Radiant Floor Panel Worksheet; and
4. Boiler Room Layout (from Hydronics Manual).

## Forced Air Systems

There is no need to submit information pertaining to the forced air heating system at the time of building permit application. That information will be collected at the time of heating permit application.

Forced air heating systems must be designed either to the latest edition of "Quality First Forced Air Guidelines", ASHRAE, HRAI or other standard recognized by the Building Inspector or under the design supervision of a professional engineer.

**Forced air systems servicing the main dwelling and a secondary suite must be provided with duct heat detectors designed to shut down the system upon their activation.**

The following documentation, duly signed, will be required for submission as part of the application for a heating permit.

1. Appliance Selection Worksheet with manufacturer=s furnace specification and blower performance data;
2. Heat Loss Summary Sheet/Heat Load Worksheet;
3. Supply Air Duct Summary (alternate worksheet is not acceptable);
4. Return Air Duct Summary (alternate worksheet is not acceptable); and,
5. If "Quality First Forced Air Guidelines" are used, then heating contractor/installer is required to provide the QFC Certification number.
6. The designer must also submit:
  - a "Certification of the Design of the Forced Air Heating System and Commitment for Field Review." The Building Department may perform a random audit of the submission.
  - a "Certification of the Rough-in Forced Air Heating System" to the building inspector prior to framing inspection. The contractor is not required to call for a heating inspection. The building inspector may perform a random audit of the rough-in installation at framing inspection.
  - a "Certification of the Forced Air Heating System" to the building inspector when the installation is complete but prior to final inspection.

**Note:**

**Appliance Selection Worksheet** Some contractors are still selecting furnaces that are greatly oversized for the calculated heat loss. The proper furnace will be the first model with an output equal to or greater than the calculated heat loss. The furnace chosen can not be more than one size larger than that model. It is to your advantage to submit manufacturer's data along with your documents.

Do not use **Alternate Supply Air and Alternate Return Air Worksheets** for permit inspection purposes. Experience has shown that these worksheets leave too much room for error. You do not want to have the extra expense of adding runs or replacing the furnace on your almost completed job.

Only **room by room method** heat load calculations will be accepted. This method will assure that each room in the dwelling receives enough heat.

**Return Air System Worksheet** When indicating the return air CFM under the selected return air grille size, the CFM should be the actual amount delivered to that floor (or area) by the furnace. Return air CFM will always be equal to or less than the maximum amount shown for each grill size. Return the same amount of delivered air and have a minimum of one return air grille per floor.

All the above mentioned worksheets must be completed by heating contractors/installers who are certified by Quality First or HRAI with acceptable documents.

Further information can be obtained from the Burnaby Building Department at 604-294-7130.

## **Combo Systems Forced Air Space and Domestic Hot Water Heating System**

Combo systems must be designed to the latest guideline edition of "Combo Forced Air Space and Domestic Hot Water Heating Systems."

The following documentation, duly signed, will be required for submission as part of the application for a heating permit.

1. Combo System Appliance Selection Worksheet;
2. Heat Loss Summary Sheet/Heat Load Worksheet (Forced Air);
3. Combo System HWT/Fan Coil Sizing;
4. Supply Air Duct Summary (alternate worksheet is not acceptable); and
5. Return Air Duct Summary (alternate worksheet is not acceptable).

## **Electrical Systems**

Heat loss calculations and layout must be signed and sealed by a qualified designer or by a professional engineer and must be submitted with the heating permit application. Circuit loading must also be specified.

## **For Hydronic, Forced Air and "Combo" Systems"**

The designer shall sign all original documents, in red pen, with a signature, printed name, and HRAI, HVCI or TECA (RHWA) certificate number, or the documentation must bear the signature and seal of a professional engineer.

All documentation, except for the heat loss calculations, must be left on site, attached to the appliance, for the inspector's review and ultimately for the Owner.

# Inspections

Systems installed under a heating system permit will be inspected by the City's Building, Electrical, Plumbing and Gas Inspectors.

## Hydronic Systems

The gas inspector will carry out:

- an in-slab piping (radiant) inspection;
- a baseboard piping inspection;
- an inspection of any low voltage wiring; and
- a final inspection (boiler room layout and controls).

### NOTE:

## Effective Immediately

All new and replacement hot water heating equipment must comply with TECA (RHWHA - Residential Hot Water Heating Guidelines). The City inspectors will be looking at all heating installations in order to ensure compliance with the guidelines which in part read as follows:

### "CORROSION":

- The material and equipment used in the HRF panel system shall be selected to significantly reduce or eliminate corrosion caused by oxygen permentation. One of the following methods shall be used to protect against system component corrosion:
  - a) **Use tubing with an oxygen barrier.** The rate of oxygen permentation recommended for tubing shall be the European BIN standard 4726: 0.1grams/m3/Day at 50°C.
  - b) **Use a stainless steel or copper heat exchanger** to isolate the radiant panel system from the boiler system.
  - c) **Use all non-ferrous components** in the heating/panel system.

## Forced Air and Combo Systems

- the gas inspector will carry out a rough-in gas and appliance venting inspection;
- the building inspector will inspect the duct work installations at rough-in stage to confirm that the sizing of supply and return air ducting is in accordance with the submitted design;
- at the time of final inspection the gas inspector will confirm the posting of the required documentation; and
- Confirm that the appliance meets the design installation specifications.

## Electrical Systems

The electrical inspector will:

- inspect at the rough-in stage; and
- carry out a final inspection.

## Certification of Heating System Design and Installation

Upon completion, all installations must have a City of Burnaby certification form signed by the heating contractor and the general contractor.

## Fees

The heating system permit fees are based on the appliance heating input (BTU) for new buildings. Please refer to the current fee schedule for details.

Changes to the heating system made after the issuance of a heating permit will be charged a revision fee.

Heating system permit fees will not be required for a retrofit system but the replacement appliance must be compatible with the existing duct work. Gas permits are still required for the replacement of gas appliances.

The fee for an electrical heating system permit is already based on the entire electrical installation cost for the building.

All heating permit application forms must be signed by the installing heating contractor.

## Further Information

Further information can be obtained from the Burnaby Building Department at 604-294-7130.

Quality First Program course information can be obtained from the HVCI office at 1-888-774-8484.

HRAI course information can be obtained from the B.C. Regional Office at 604-821-1943.

Information concerning the Gas Safety Branch Directive DC.36 can be obtained from the regional Provincial office at 604-660-6233.

TECA (RHWHA) hydronic system design course information can be obtained from BCIT part-time studies department or from RHWHA office at 604-251-2122.

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