

Commercial Cooking Equipment Exhaust & Air Systems Forming Part of a Building Permit Application

OVERVIEW

The following information is provided to assist in determining the building permit application requirements for drawings and design of commercial cooking equipment exhaust and air systems that typically form part of a tenant improvement permit for restaurants and take-outs. Also, see our guide [Restaurants & Take-outs – Tenant Improvement Building Permit Application Checklist](#) and form [Commitment Not To Create Grease-Laden Cooking Vapours](#).

GENERAL REQUIREMENTS

All new systems and upgrades to existing systems must be designed by a Professional Engineer registered in the Province of BC. Sealed designs, specific to the project, and the Letters of Assurance Schedule B are required at Building Permit application. Field reviews and Schedule C-B are required at final inspection.

The Engineer of Record shall confirm inspections and tests are performed on all systems including duct leakage testing and a dry trip test of the kitchen hood fire suppression system.

PLANS AND SPECIFICATIONS – MINIMUM INFORMATION REQUIREMENTS

The following information shall be provided on the plans and specifications (as applicable):

- a. The size and location of all cooking equipment.
- b. The location and size of the canopy in relation to the cooking equipment.
- c. Details of the canopy construction, canopy design exhaust airflow, the location of filters (size, type and angle), materials used, depth of canopy, lights and any other accessory equipment.
- d. Details of the canopy to exhaust duct connection.
- e. Construction details and materials used for the exhaust duct, including size and location of access panels and slope of horizontal duct runs.
- f. Manufacturer, model type, capacity and location of the commercial cooking equipment exhaust fan.
- g. Method used to protect combustible ceiling and wall finishes within 450mm of the canopy and duct.
- h. Method used to protect combustible materials at exhaust duct penetrations of ceiling/floor and ceiling/roof assemblies.
- i. Requirements for clearances to combustible materials, limited combustible assemblies and non-combustible assemblies.
- j. Method used for mounting roof top equipment (Structural and/or Architectural curb details).
- k. Location of the replacement air unit (manufacturer, model type and capacity) and associated duct work.
- l. Manufacturer, model type and capacity of the hood fire suppression system. The location of piping, discharge heads and fusible links are to be shown, as well as the location of manual pull stations (activation devices).

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PLANS AND SPECIFICATIONS – MINIMUM INFORMATION REQUIREMENTS cont'd

- m. Location of the flue shut-off devices.
- n. Location of roof access for maintenance of rooftop mounted equipment.
- o. Interlock with fire alarm system. If no fire alarm system exists in the building, a local alarm will be required.
- p. Kitchen ventilation system control sequence(s) (exhaust air stays on, local make-up air forming part of the hood assembly shuts off) shall be shown.
- q. Gas/electrical appliances shutoff shall be shown.

COMMERCIAL COOKING EQUIPMENT EXHAUST AND REPLACEMENT AIR SYSTEMS

The Coordinating Registered Professional (CRP) or where a CRP is not involved the Engineer of Record (providing the Letter of Assurance Schedule B) shall determine the appropriate additional Professional Engineers required to complete the installation of the commercial cooking exhaust, fire suppression and air systems. As applicable, Model Schedule S-B's from supporting registered professionals are to be collected and retained by the Engineer of Record.

Makeup Air (NFPA 96 8.3, BCBC 6.3.2.8.):

- Mechanical Engineer to calculate the required amount of make-up air and the design requirements (eg: fire dampers) for any penetrations through wall or floor systems.
- Makeup air that is tempered, filtered, and interlocked with exhaust devices served, shall be provided by mechanical means.

Exhaust Fans and Hoods:

- An exhaust fan used to ventilate commercial cooking equipment must be listed by UL or ULC and conform with the referenced UL publications in NFPA 96.
- Electrical components must be listed by CSA.

DEFINITIONS AND REQUIREMENTS FOR TYPE I AND TYPE II COOKING OPERATIONS

Type I Cooking Operations (Grease-Laden Vapours)

A Type I Cooking Operation is defined as any cooking process that produces significant smoke or grease-laden vapors, and includes any equipment designed by the manufacturer to be able to produce significant smoke or grease-laden vapours, except where specifically approved under NFPA 96. Type I Cooking Operations require NFPA 96 compliant exhaust hood, exhaust duct, and automatic fire suppression systems.

Examples of Type I Cooking Equipment

- Range (burners or hot top), stove
- Char broiler
- Induction cooker
- Electric frying pan
- Barbecue, rotisserie
- Tilting skillet, braising pan
- Hot plate (gas burner, electric coil or flat top)
- Oven if used for cooking/roasting meats
- Wok, fry grill, griddle, pan frying
- Don air vertical broiler
- Salamander, deep fat fryer
- Domestic range used in commercial operations

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Examples of Type I Cooking Equipment cont'd

- Any equipment recommended to have fire suppression by the manufacturer, any equipment which produces or has been designed by the manufacturer to have the potential to produce comparable amounts of smoke or grease. [NFPA 96, A.10.1.2]
- Cooking operations that receive complaints of producing objectionable odors or are found to cause interior build-up of grease or smoke residue (Provincial Health Act).

The following requirements apply to Type I Cooking Operations:

- Full compliance with NFPA 96 (Type I Hood) for fire suppression and ventilation.
- Mechanically engineered drawings to be submitted via the permit process detailing the kitchen equipment lineup, nozzles and suppression design, hood and backsplash design, and ducting, complete with related design specifications.
- Space air balancing shall be provided on the plans.

Type II Cooking Operations (Steam & Heat Removal)

A Type II Cooking Operation is defined as any cooking equipment or process that produces significant steam or heat but does not produce grease-laden vapours. The BC Building Code Division B – Part 6 requires that air contaminants be removed at their point of origin. A mechanical engineer will be required to take into consideration the HVAC requirements for the space, as well as any additional requirements for cooking equipment.

Examples of Type II Cooking Equipment

- Open Bain Marie
- Pastry oven
- Range
- Popcorn maker
- Conveyor pizza oven used for pizza or bread
- Warming oven, roll warmer
- Coffee maker, coffee roaster
- Steam reconstitution device, steamer
- Closed pizza oven
- Baking oven
- Hot dog display heater
- Toaster

Where an applicant proposes to only do Type II cooking the form [Commitment Not To Create Grease-Laden Cooking Vapours](#) must be submitted with the building permit application.

The following requirements apply to Type II Cooking Operations:

- Type II hood and exhaust with general HVAC ducting.
- Engineered design drawings of Type II hood, exhaust and makeup air systems are required at permit application. Equipment not located beneath a Type II exhaust system shall be accounted for in the design of the building HVAC system.
- Menu and details of cooking processes that reflect a Type II cooking operations.

Appliances with potential of Type I Cooking Operations used only for Type II Cooking Operations:

- A domestic range, hot plate or induction cooker in a commercial cooking establishment used only for non-grease applications such as boiling water (e.g., potatoes, pasta, rice), reheating pre-made soups, heating beverages (e.g., hot chocolate) or melting chocolate.

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At the discretion of the Building Official, an appliance that is designed with the potential for Type I Cooking, and that will only be used for Type II Cooking, may be accepted with a permanent sign posted on the Type II hood that states "COOKING CAUSING GREASE-LADEN VAPOURS IS NOT PERMITTED - EXHAUST SYSTEM IS DESIGNED FOR STEAM AND HEAT REMOVAL ONLY."

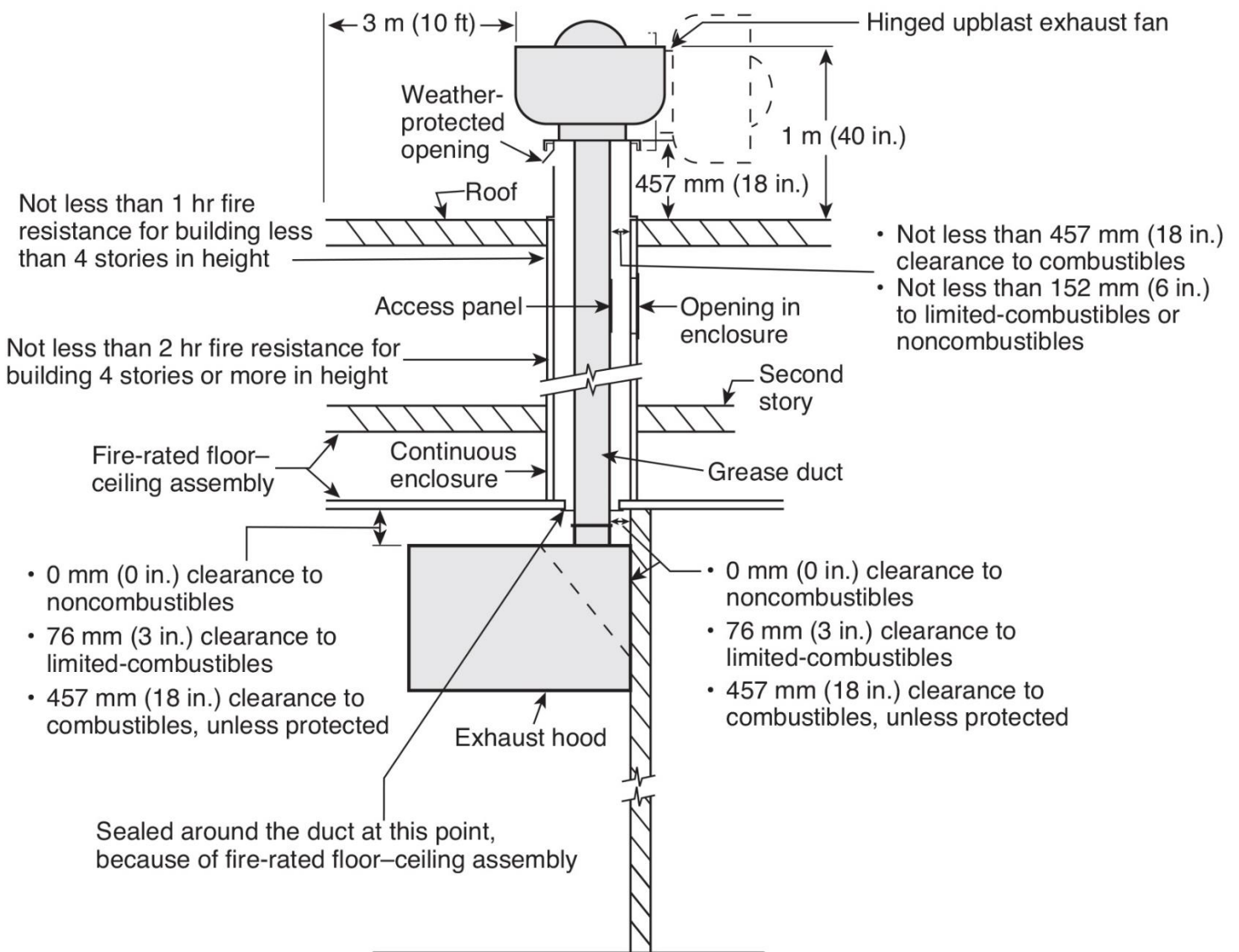
If you have any questions or require clarification, please contact Building Inspections at 250-755-4429.

This guide should not be used as a substitute for existing building codes and other regulations.

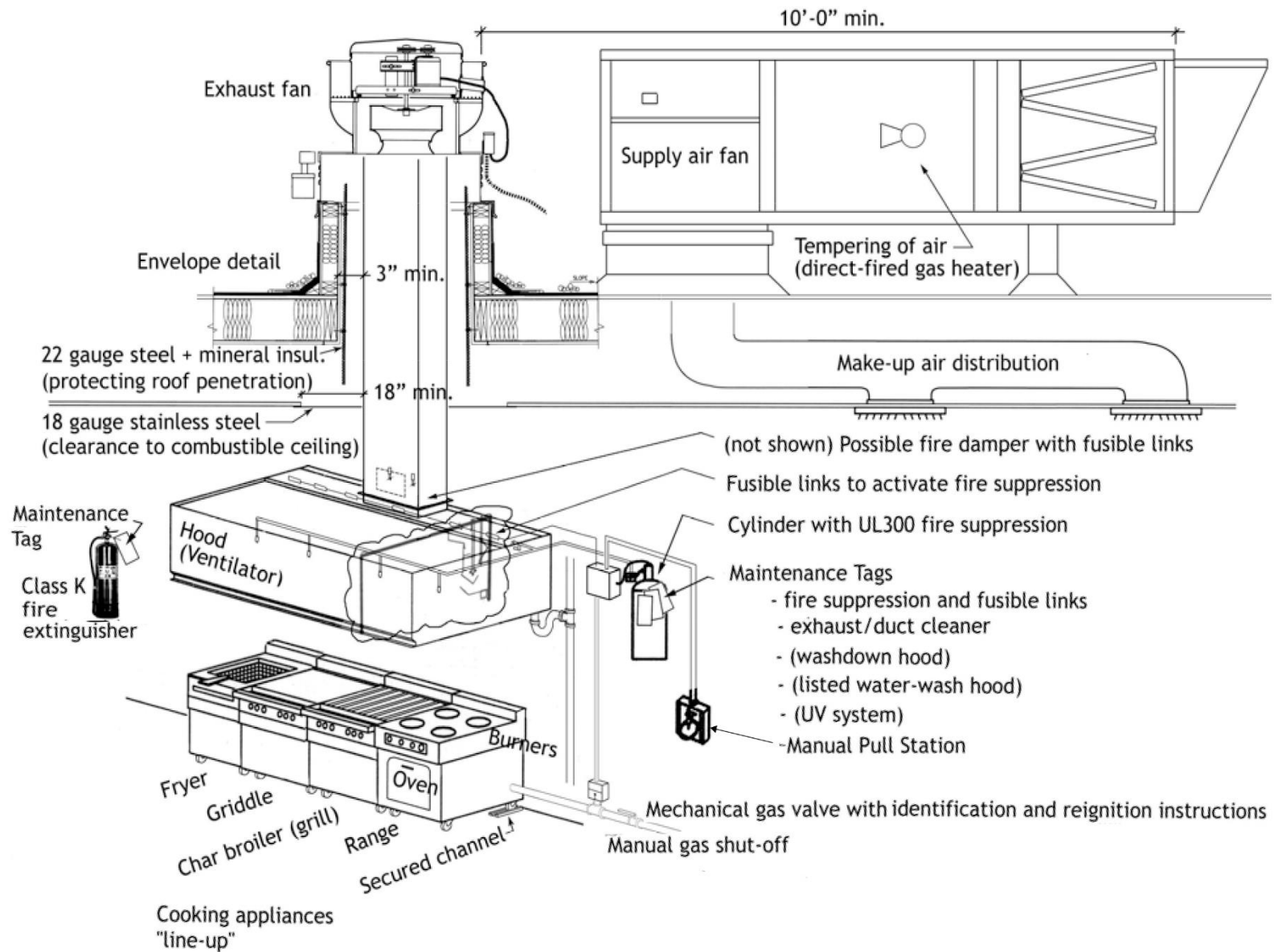
The building owner is responsible for compliance with all codes, bylaws, and other regulations.

ILLUSTRATIONS

Typical Clearance Details



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EXAMPLE OF A HOOD/VENTILATION SYSTEM FOR A COMMERCIAL KITCHEN