Commercial Kitchen Hood application shall include exhaust fan, duct, hood, pollution control unit (if any), and make-up air system in one permit application.

References:

1. Seattle Mechanical Code (SMC) 2015
2. Director's Rule (DR) 8-2014
3. Seattle Energy Code (SEC) 2015
4. Seattle Building Code (SBC) 2015
5. Seattle Fire Code (SFC) 2015
6. Seattle Fuel Gas Code (SFGC) 2015
7. National Fire Protection Association (NFPA) Standard 96-14

This worksheet must be submitted with commercial kitchen range hood permit applications.
It explains and organizes information needed by the Seattle Department of Construction and Inspections (SDCI) to efficiently review plans and issue permits. SDCI will use it to verify code compliance.

A. Energy Star appliances: Are any appliances being installed in this commercial kitchen, such as: fryers, hot food holding cabinets, steam cookers, and dishwashers, per SEC C403.9? If yes, Energy Star label is required. ☐ Yes ☐ No

B. Established use and history of building
Is this an existing restaurant, food processing area, or food service area: ☐ Yes ☐ No

If no, provide change of use, SDCI permit application number: _____

C. Location of exterior ductwork and mechanical equipment

1. Is ductwork or mechanical equipment located outside of the building other than on the roof top? ☐ Yes ☐ No
2. Provide plan and elevation views showing ductwork, duct enclosure, hood, cooking surface air supply, exhaust system, and equipment support including detail (see examples).

D. Type of Hood

	Quantity
1. For grease and smoke removal, Type I hood included in this permit	_____
2. For steam, vapor, heat, or odor removal, Type II hood included in this permit	_____

3. Is hood use for solid-fuel cooking equipment? If yes, a separate exhaust system is required. (SMC 507.2.2 & 506.3.5) ☐ Yes ☐ No
4. Hood shall have a permanent, visible label identifying the Type of hood. (SMC 202, 507.1)

E. Type of material and thickness (SMC 506.3.1.1, SMC 506.4.1, SMC 507.2.3, MSC 507.3.1)

Component	Type of Material	Type I Hood		Type II Hood	
		Thickness (Gage)		Thickness (Gage)	
		Min. Req.	Proposed	Min. Req.	Proposed
Duct and Plenum	Stainless Steel	18	_____	26 up to 12" Diameter	_____
	Steel	16	_____	22 up to 30" Diameter	_____
Hood	Stainless Steel	20	_____	24	_____
	Steel	18	_____	22	_____
Flashing	Steel	22	_____	22	_____

Fan and Motorized damper Recommended air velocity: 500 fpm

Fan make and model _____ Motor _____ H.P.

Static pressure _____ Inch H_2O

Duct size: _____ in. X _____ in.; Duct area = _____ Sq. Inch= _____ Sq. in / 144 = _____ ft^2

Air velocity through duct = _____ CFM/ _____ ft^2 = _____ fpm

Effective damper opening: _____ in. X _____ in. = _____ ft^2

Air velocity through damper = _____ CFM/ _____ ft^2 = _____ fpm

J. Slope of duct and cleanout access (SMC 506.3.7, SMC 506.3.8, SMC 506.3.9.2)

1. Horizontal duct up to 75' long: Min slope 1/4 in/ft. Proposed _____ in/ft.
   More than 75' long: Min slope 1 in/ft. Proposed _____ in/ft.
   Number of Proposed Cleanouts _____
2. Grease duct horizontal tight-fitting cleanout doors shall be spaced not more than 20 ft. apart, located not more than 10 ft. from changes in direction that are greater than 45 degrees and located at grease reservoirs. Great duct vertical tight-fitting cleanout doors shall be provided at a minimum of one on each floor where grease ducts pass vertically through floors.

K. Duct enclosures (SMC 506.3.11, SMC 506.3.12)

1. Ducts penetrating a ceiling, wall, or floor shall be enclosed in a duct enclosure having a fire rating per SBC Table 601 from the point of penetration to the outside air. A duct may only penetrate exterior walls at locations where unprotected openings are permitted by Table 705.8 of the Seattle Building Code.
2. For code compliance purposes, it is acceptable to assume that ducts penetrating concrete, brick, or steel ceilings, walls, or floors shall require a 2-hour fire-resistive duct enclosure, and for others, it shall be 1 hour.

Type of Construction	Min. Fire-Resistive Const. of Enclosure	Proposed Enclosure	
		Rating	Materials and Construction
IA, IB, IIIA, IIIB	2 hour	hr.	
IIA, IIB, IV, VA	1 hour	hr.	

3. Duct that penetrates only a non-fire-resistance rated roof/ceiling assembly may omit the enclosure per SMC 506.3.11 Exception 1.
4. Duct enclosures shall be separated from the duct by at least 6 in. per SMC 506.3.11.1. **Proposed** _____ in. Duct enclosure shall be of metal stud construction and shall be sealed with flashing around the duct at the point of penetration and vented to the exterior through a weather-protected opening.
   Flashing provided: ☐ Yes ☐ No (NFPA 96, 7.7.1.3)
5. Duct enclosures shall serve only one kitchen exhaust duct.
6. Partial application of a field-applied grease duct enclosure system shall not be installed for the sole purpose of reducing clearances to combustibles at isolated sections of grease duct (SMC 506.3.11.2).
7. Tight-fitting hinged access door shall be provided at each cleanout. Access enclosure doors shall have fire-resistance rating equal to the enclosure. An approved shall be placed on the access door: "**ACCESS PANEL. DO NOT OBSTRUCT**" (SMC 506.3.12)

F. Hood size location and capacity (SMC 507.4, SCM 507.5)

1. Canopy hoods are hoods that extend a minimum of 6" beyond the cooking surface.
   Type of hood proposed: ☐ Canopy ☐ Non-canopy
   Distance between lip of hood and cooking surface: _____ft. 4 ft. maximum allowed
   Proposed distance for Canopy hood: _____ ft. 3 ft. maximum allowed
   Proposed distance for Non-Canopy hood:
   For non-canopy hood, setback will not be less than, or equal to, 1 foot.
2. State highest appliance duty rating placed under the hood. (See table below.)
   Cooking appliance duty rating:_____; Required exhaust flow rate:_____ CFM/Linear ft.
   a. Proposed listed hood Make and Model number: _____
   b. Proposed listed hood Exhaust rating: _____ CFM
   c. Proposed unlisted hood: Quantity of air = linear ft. of hood X CFM/ft. (from table below)
   _____ ft. X _____CFM/ft = _____CFM
3. Total kitchen hood(s) exhaust flow rate:_____ CFM
   UL listed hoods are required if total hood exhaust flow rate is over 2,000 CFM. (C403.2.7.1)

Type of Hood	Rated Hood Capacity CFM/linear ft. for type of cooking appliance Duty							
	Total kitchen hood exhaust flow rate **2,000 CFM or less** and unlisted				Total kitchen hood maximum exhaust flow rate **over 2,000** and listed			
	Per SMC Section 507.5*				Per SEC Table C403.2.7.1*			
	Light	Medium	Heavy	Extra Heavy	Light	Medium	Heavy	Extra Heavy
Backshelf/pass-over	250	300	400	N/A	210	210	280	N/A
Double island canopy	250	300	400	550	175	210	280	385
Eyebrow	250	250	N/A	N/A	175	175	N/A	N/A
Single island canopy	400	500	600	700	280	350	420	490
Wall mounted canopy	200	300	400	550	140	210	280	385

* N/A - Not Allowed

G. Fan motors and air velocity

1. Fan motor shall not be installed within ducts or under hood. (SMC 506.5.1.1)
2. Exhaust fan shall be interlocked with Type I cooking appliance and makeup air system. (SMC 507.1.1, SMC 508.1, SFGC 505.1.1)
   Duct size:_____ in. X _____ in.; Duct area = _____ sq. in. = _____ sq. in./144 = _____ ft^2
3. Proposed air velocity in the exhaust duct (SMC 506.3.4):

Type of Hood	Air Velocity (FPM)	CFM/Duct Area (ft^2)				Proposed Air Velocity	
I	Required 500 to recom. 2500		/		=		FPM
II	Recommend 500 to 2500		/		=		FPM

L. Multiple hood venting

1. Proposed number of hoods vented by a single duct system: _____
2. Multiple Type I hoods are permitted to be combined where **all** of the following conditions are met:
   a. All interconnected hoods are located within the same story.
   b. All interconnected hoods are located within the same room or in adjoining rooms.
   c. Interconnected ducts do not penetrate assemblies required to be fire-resistance rated.
   d. The grease duct system does not serve solid-fuel-fired appliances. (SMC 506.3.5)
3. A hood outlet shall serve not more than a 12-foot section of hood. (SMC 507.1.5)

M. Additional information for Type 1 hood only:

1. Grease filters shall be installed at a minimum of a 45 degree angle and equipped with drip tray and gutter beneath lower edge of filters. (SMC 507.2.8.2) Proposed: _____ Degrees
2. Minimum distance between lowest edge of grease filters and cooking surface or the heating surface. (SMC Table 507.2.8)
   Without exposed flame shall be **not less than 0.5 ft.** Proposed: _____ft.
   Exposed flame and burners shall be **not be less than 2 ft.** Proposed: _____ ft.
   Exposed charcoal, charbroil shall **not be less than 3.5 ft.** Proposed: _____ ft.
3. Where enclosures are not required, duct systems and exhaust equipment shall have clearance to combustible construction of not less than 18" and non-combustible construction and gypsum wallboard attached to non-combustible structures of not less than 3".
   Proposed clearance: _____in. from ☐ Combustible ☐ Non-combustible construction
   ☐ Exception taken (SMC 506.3.6)
4. Hood shall be installed with a clearance to combustibles of not less than 18".
   Hood clearance from ceiling: _____ in.; from wall:_____ in. ☐ Exception taken (SMC 507.2.6)
5. Type 1 hoods or portions thereof penetrating a ceiling, wall, or furred space shall comply with Section SMC 507.2.7. Field-applied grease duct enclosure systems, as addressed in Section SMC 506.3.11.2, shall not be utilized to satisfy the requirements of this section.
6. All joints and seams shall be made with continuous liquid-tight weld or braze made on the external surface of the duct system. (SMC 506.3.2)
7. Vibration insulation connector may be used, provided it consists of noncombustible packing in a metal sleeve joint. (SMC 506.3.2.4)
8. Exhaust fans used for discharging grease exhaust shall be positioned so that the discharge will not impinge on the roof. The fan shall be provided with an adequate drain opening at the lowest point to permit drainage of grease to a suitable collection device. (SMC 506.5.2)
9. Fire Suppression System shall be per the Seattle Fire Code (SMC 509.1). The Fire Department phone number is (206) 386-1450.
10. All grease ducts shall be tested to ensure welding and brazed joints are liquid tight. (SMC 506.3.2.5)
11. Performance test certificate of the hood system shall be provided to the owner before the final approval. Test shall verify proper operation, the rate of exhaust, makeup air, capture, and containment performance of the exhaust at normal operation conditions. (SMC 507.6)

H. Exhaust outlet location (SMC 506.3.13, SMC 506.4.2, SMC 506.5.3 through SMC 506.5.5)

	Type I		Type II	
	Min. Req.	Proposed	Min. Req.	Proposed
Distance from same or adjacent building	10 ft.	ft._____	10 ft.	ft._____
Distance above adjoining grade	10 ft.	ft._____	10 ft.	ft._____
Distance from property line	10 ft.	ft._____	10 ft.	ft._____
Distance from windows and doors	10 ft.	ft._____	3 ft.	ft._____
Distance from mechanical air intake	10 ft.	ft._____	10 ft.	ft._____
Distance from duct above adjoining grade at alley	16 ft.	ft._____	16 ft.	ft._____
Exhaust outlet shall terminate above roof	40 in.	in._____	30 in.	in._____
Ductwork shall extend above roof	18 in.	in._____	N/A	N/A
Exhaust outlet terminate at exterior wall	See note 1.		30 in.	in._____

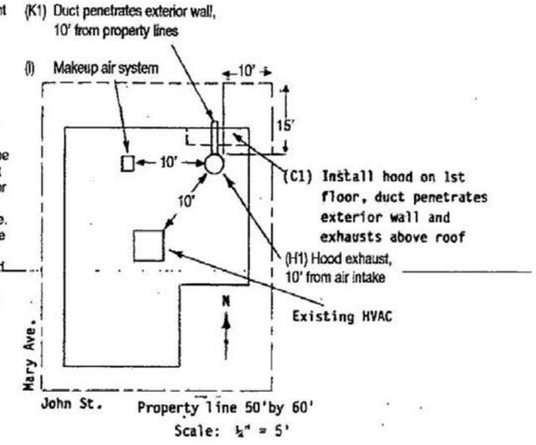
Note 1. DR 8-2014 or current DR, whichever is latest.

I. Makeup air (SMC 508.1, SEC C403.2.7.1)

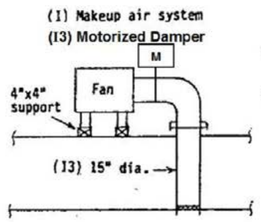
1. Makeup air shall not be less than 90% of the exhaust:_____CFM.
2. The temperature differential between makeup air and the air in the condition space shall not exceed 10°F, whne the amount of makeup air supply exceeds 2,500 cfm per space.
   Minimum required Btu/h output: 1.08 X _____ CFM X (58-24)°F =_____Bru/h.
   Makeup air heater capacity: Input_____Btu/hr, Output _____Btu/hr
3. Total kitchen hood systems with an exhaust flow rate greater then 2,000 CFM shall comply with one of the following: (Select an option)
   ☐ Not less than 50% of all replacement makeup air shall be transfer air that would otherwise be exhausted.
   a. Amount of transfer air: _____ CFM.
      The amount of air that comes from adjacent space air handlers.
   b. Amount of makeup air (90% Hood exhaust air - transfer air): _____ CFM.
      i. The makeup air unit shall be sized to handle the full 90% of exhaust as required per SMC 508.1 in the event that the hood is in operation and the air handler serving the adjacent space in not in operation.
      ii. The plans shall indicate a sequence of operations and interlock with hood exhaust, makeup air unit and adjacent air handling equipment. Makeup air unit shall modulate down to the reduced makeup air calculated above when the adjacent air handler is in operation.
   ☐ Demand Control Ventilation:
   Not less than 75% of hood exhaust air is required to be reduced by a minimum of 50%.
   ☐ Listed Heat Recovery Device:
   Sensible Heat Recovery of not less than 40% effectiveness on 50% of the total exhaust air flow.

Example 1
Mechanical Plot Plan

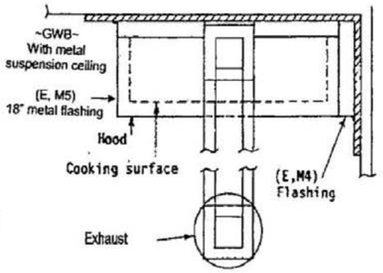
1. Identification of adjacent streets, property and alleys.
2. Any easements that cross the property or other pertinent legal features.
3. Property line and property dimension.
4. Location, size and shape of any structure present on site and proposed for construction.
5. A North arrow and scale.
6. Locate and describe the job. Show location of hood, hood exhaust and supply, existing HVAC, and HVAC exhaust and supply.



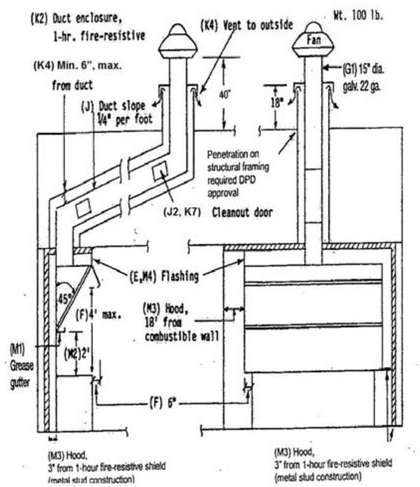
Example 2
Elevation View of Makeup Air System

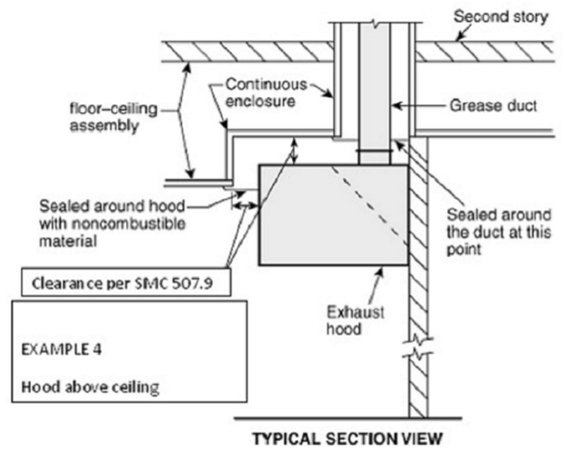


Plan View of Hood System



Example 3
Elevation Views of Hood System





Updated December 2018

Seattle Department of Construction & Inspections

Commercial Kitchen Hood Worksheet 2015 SMC

Record Number: | | | | | | | | — | | |

Site Address: _____

SDCI Approval Stamp