

# Chapter Twelve – Inspections

**INSPECTIONS .....2**

**Pre-Construction Inspections .....2**

    Introduction .....2

    The Planning Flow.....2

    Building and Ventilation Component Construction References .....3

    Areas and Components That Require Design and Code Compliance.....4

    Preliminary Plan Review .....4

    Specifications.....7

    Equipment Cut or Specification Sheets .....7

    Shop Drawings.....7

    Supporting Architectural and MEP Documents.....8

**Pre-Occupancy Inspections .....8**

    Prior to Occupancy Permit.....9

    Pre-Operational Inspection Checklist .....9

    Start-up and Installation.....11

**Post Operational Inspections.....12**

    Introduction .....12

    Non-Compliant Components .....13

    The Kitchen Exhaust Inspection Sheet .....14

    Inspection Sheet Explanation.....16

    Questions to Ask Service Providers.....29

**Inspection After a Fire .....29**



*A Fire Inspector checking behind the filters for grease buildup*



*Inspection Seminar at Hickam AFB, Hawaii*

## Inspections

### Pre-Construction Inspections

#### Introduction

As commercial cooking operations become more complex, the need for knowledge and understanding of kitchen ventilation systems increases. It is a challenge for Building and Fire Inspectors to stay current with the various components and ensure that these components are compatible when joined together to form a complete system.

This chapter provides general information that AHJ officials should be aware of when beginning the review process on a newly submitted project.



The design/installation phase is the best time to ensure the compatibility of access, balanced fire extinguisher coverage<sup>1</sup>, clearances, tippable fans, and proper air balancing, etc. After the exhaust system is up and running, repairs and upgrades are more difficult.

#### The Planning Flow

Developers and those involved in supplying and installing the various components should confirm which Standards and Codes they must operate under and what (if any) variances and exceptions are acceptable to the AHJ. It is best to list these codes and standards on the construction drawings. A copy of any plan review comments should be attached to the construction plans.

Information needs to be well organized, accurate and complete.

#### Communications

One of the obstacles to maximize performance is that the various disciplines, designers, engineers and the AHJ community fail to communicate with each other except through the documents they are responsible for.

Misunderstandings can be avoided if all parties are talking the same language, understanding the drawings, specifications and communicating in general.

A challenge for the AHJ is to understand the role of designers and engineers; be familiar with the appropriate codes, standards, testing, products and interaction between the equipment; and be comfortable signing off on the CKV system. This book will assist the AHJ in understanding and appreciating the importance of the interrelationship between all these components.



*An inspector checking the access panels*

**Important Note:** It is a practice of many jurisdictions that the Fire Department Inspectors be involved in the approval of any plans with the Building Department. This practice helps assure the overall effectiveness of the system.

---

<sup>1</sup> All appliances are covered according to the manufacturer's instructions and UL 300.

### Building and Ventilation Component Construction References

#### Codes & Standards

Confirm the editions of whatever Codes and Standards are being used on the jobsite. Ensure that all parties are on the same page regarding the Codes.

On multi-tenant sites there is a particular need for concerted cooperation of design, installation, operation, and maintenance responsibilities by tenants and by the building owner.

#### Handbooks Available For Reference:<sup>2</sup>

- American Institute of Architects<sup>3</sup>, Masterspec<sup>4</sup>
- ASHRAE (American Society of Heating Refrigerating & Air Conditioning Engineers, Inc.) Handbook 2010 -- 154
- ETL (Engineering Technical Letters)
- Greenheck Design Guide
- NFPA (National Fire Protection Association) HANDBOOK
- NSF (National Sanitation Foundation) INTERNATIONAL
- PG&E (Pacific Gas & Electric) Design Guides<sup>5</sup>
  - Selecting and Sizing Exhaust Hoods
  - Optimizing Makeup Air
  - Integrating Kitchen Exhaust Systems with Building HVAC
  - Optimizing Appliance Position and Hood Configuration
- SMACNA (Sheet Metal & Air Conditioning Contractors National Associations)
- UL (Underwriters Laboratories)
- ULC (Underwriters Laboratories of Canada)

#### Websites and the Internet

The Internet provides the ability to communicate plans and revisions. There are many opportunities to access drawings, shop drawings, details, specifications and manufacturer cut sheets.

Architects and engineers can make current drawings and modifications available in a variety of ways; such as: projects with dedicated websites to .ftp sites.

Documents are under constant revision due to errors being corrected, additional information being added, revisions being requested by the owner and many other legitimate reasons. Always note the version of a document and its current date for record purposes.

Maintain records of various document revisions and dates for future reference.

---

<sup>2</sup> See *Appendix Chapter* for details on how to acquire these reference materials.

<sup>3</sup> AIA Knowledge Base is found at <http://info.aia.org/knowledgebase/>

<sup>4</sup> Masterspec format specifications are maintained and distributed by ARCOM at [www.arcomnet.com](http://www.arcomnet.com).

<sup>5</sup> <http://www.fishnick.com/ventilation/designguides/>

## Areas and Components That Require Design and Code Compliance

- Applicable Standards
- Hoods
- List of acceptable design practices
- Exhaust flow rates
- Grease filters
- Ductwork
- Types of exhaust fans
- Types of makeup air fans
- Makeup air systems
- Testing and balancing (T & B)
- Fire-extinguishing system equipment



## Preliminary Plan Review

Obtain good documentation, also referred to as “deliverables” from the submitter.

Confirm all plans or specification details.

Require that architects, engineers, designers, foodservice consultants and owners discuss preliminary design plans. This step can be invaluable to all parties.

## Permit Submittal Essentials

The following should be required for a permit:

- Clearly reproducible drawings
- A detailed set of specifications
- Full set of manufacturers cut sheets
- Manufacturer shop drawings as necessary
- Supporting architectural documents
- Supporting mechanical, electrical and HVAC documents

**DO NOT** accept block plans, preliminary sketches or incomplete documents except for preliminary discussion purposes. Require all parties to define, in writing, precisely what they are going to do or supply; and the specifications of these products or services.

## List of Good Design Practices

This list of design practices is from ASHRAE’s Technical Committee for Kitchen Ventilation, TC-5.10. The committee is responsible for *Kitchen Ventilation* chapter of the ASHRAE Handbook. While these recommendations are not mandatory, implementation by a submitter may indicate that they are keeping up with the latest best practices.

**Note:** Not all comments apply to all conditions.

- Increased front hood overhang to 30.5 cm (12 in.) (Note that this is more than the IMC 15.2 cm [6 in.] minimum requirement)
- Push equipment back to minimize the rear gap between equipment and back of the hood
- Add a rear seal at cooking equipment (e.g. shelf below cooking height)
- Minimize hood mounting height to 2 m (6 ft. – 6 in.) above finished floor