

KITCHEN VENTILATION SYSTEMS AND FOOD SERVICE EQUIPMENT FABRICATION AND INSTALLATION GUIDELINES



**SHEET METAL AND AIR CONDITIONING CONTRACTORS'
NATIONAL ASSOCIATION, INC.**

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FIRST EDITION – APRIL 2001



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4201 Lafayette Center Drive
Chantilly, VA 20151-1209

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NATIONAL ASSOCIATION, INC.**

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JOINT FOREWORD

This first edition of SMACNA Kitchen Ventilation Systems and Food Service Equipment Fabrication and Installation Guidelines (Sections I & II) is intended to provide basic reference guidelines as to industry accepted practices for fabrication and installation of kitchen ventilation systems and custom built food preparation, and serving equipment commonly used in non-domestic food facilities.

Section I on Kitchen Ventilation Systems presents information and drawings primarily to illustrate the elements of construction and installation of commercial kitchen ventilation systems. This guide will assist the designer, contractor and code official to understand the complexities of designing, installing, constructing, and balancing both the exhaust and the make-up air systems required in commercial kitchen ventilation.

Section II on Food Service Equipment Fabrication covers custom built food service equipment for specifiers, contractors, regulatory officials, and users of commercial food service facilities with practical guidelines for designing, fabricating, evaluating, and purchasing quality products.

The details shown depict minimum standards for fabricating and installing equipment that should provide owners with years of trouble free usage. The tools and techniques for fabrication are readily available in most sheet metal shops. The recommendations given herein were developed after reviewing the current policy of applicable independent accreditation agencies, reviewing representative model code requirements, and polling the industry experience of participating fabricators who are in various markets across the country.

These recommendations are not intended to assure compliance with the regulations of local public safety or sanitary officials or to prohibit usage of materials or methods that exceed these minimum requirements when such use would improve the integrity or adaptability of any particular equipment item.

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KITCHEN VENTILATION SYSTEMS

SECTION I

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CHAPTER 1

INTRODUCTION

1.1 SCOPE

The information and drawings in this manual are presented primarily to illustrate the elements of construction and installation of commercial kitchen ventilation systems. The information is intended to encourage more standardization in installations and to call attention to the appropriate segregation of responsibilities of those concerned with installations.

The science of commercial kitchen ventilation includes both exhausting and replacing air within the cooking area. Managing and balancing airflow is a complex issue, whether a restaurant is a small free-standing site or a large institutional kitchen.

It is a challenge to properly ventilate commercial kitchens, as they require the movement of large amounts of air through ductwork and other equipment in very restricted spaces.

Overall design, construction and installation coordination, as well as maintenance, is required to get the optimum from the system, and achieve proper energy-efficient air balance.

This guide will assist the reader to understand the complexities of designing, installing, constructing and balancing both the exhaust and the make-up air systems required in commercial kitchen ventilation.

1.2 INTENT OF USE

Architect/Engineer/Design

This manual provides clear and definitive references of the codes and design requirements of both commercial kitchen exhaust and make-up air systems. The accompanying charts and tables will aid in analyzing and calculating the airflow rates and design criteria necessary to design and install a comprehensive and balanced system. This guide will help to design a system that offers efficient operating costs, climatic controls, and satisfies building and fire regulations.

Owners/Facility Managers

The principles and components of the kitchen ventilation system are explained so that owners and managers can understand the interdependence of each piece of the system. As well, they will be able to recognize the value of having a complete and properly integrated system that will provide a positive and comfortable work environment, at an effective cost.

Contractors

Contractors will be able to use the manual as a construction and installation guide and as a reference to confirm the model codes that administer these systems. We have tried to cover every facet of the construction and installation process from a practical point of view.

Code Officials

As a practical guide, code officials will find the information in this manual beneficial. It identifies the key areas of concern with regards to fire and health safety. Additionally, it identifies the “Standards of Practice” that quality contractors strive to achieve.

This manual will assist local authorities in judging adequacy and comparability in the installation of commercial kitchen ventilation systems, their components and assemblies.

A clear understanding and the ability to accurately analyze the complete system needs will aid in complying with fire and health standards and the need to create a comfortable work setting.

1.3 RESPONSIBILITIES

Architects

The architect is responsible for the design of commercial restaurants, which includes, fire-resistive walls, floor-ceiling assemblies, roof-ceiling assemblies, and the protection of openings therein as well as the horizontal and vertical smoke barriers. In their consideration for fire protection, architects must first determine the overall function of the structure, and the type of occupancy of its individual spaces.

They are also responsible to design appropriate spaces within the building that are required to be separated by fire-resistive assemblies with protected openings, as described in the local building code. Architects will communicate and cooperate with the authority having jurisdiction at the building site, and comply with any special conditions of fire protection design required by that authority.

Design plans should show:

- S The necessary horizontal and vertical fire separations.
- S The hourly requirements of the fire separation.

