ACCEPTED INDUSTRY PRACTICE FOR INDUSTRIAL DUCT CONSTRUCTION

SECOND EDITION - AUGUST 2008

SMACNA

SHEET METAL AND AIR CONDITIONING CONTRACTORS’ NATIONAL ASSOCIATION, INC.
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FOREWORD

The Sheet Metal and Air Conditioning Contractors’ National Association, recognizing the popularity of this guide since it was first published in 1975, has sought to update the information it contains on the basis of the more recent editions of the Round and the Rectangular Industrial Duct Construction Standards of 1999 and 2004, but maintaining the narrower scope, table presentation and graphics of the original Accepted Industry Practice for Industrial Duct Construction.

This guide is a compilation of standards and construction techniques which have received wide acceptance for the fabrication and installation of ducts designed to convey air and gases, usually contaminated with particulates, fumes, vapors or corrosive aerosols.

Industrial duct is a broad classification of ductwork used in industry for many diverse applications, from air distribution and ventilation exhaust in Class 1 systems, to pneumatic conveying in Classes 2, 3 and 4, to conveying of industrial exhausts containing corrosive aerosols. These contaminated flows are usually conveyed at velocities in excess of 2,000 feet per minute and frequently at static pressures in excess of positive or negative 10 inch water gage. While there may sometimes appear to exist an overlap between industrial ventilation (Class 1) and HVAC applications in the under 10 inch wg category, closer inspection reveals marked differences in performance, maintenance and structural requirements between the two. Unfortunately, industrial ventilation duct is sometimes specified per SMACNA’s HVAC Duct Construction Standards, when perhaps specifying a industrial Class 1 system would result in a more satisfactory installation.

MAJOR CHANGES FROM THE PREVIOUS EDITION

- Created a new chapter structure somewhat similar to that in the Round and Rectangular Duct Construction Standards.
- Combined and reorganized sections of the 1st edition into the new chapter structure.
- For consistency, the material in chapters two and three was taken directly from the Round and Rectangular manuals.
- Created a new chapter four with all new duct selection tables, maintaining the format and style of the first edition, but consistent with the information in the Round and Rectangular manuals. Added many figures for seams and joints to complete the duct construction features of the manual.
- Added new chapters for Hangers and Supports, Fittings, Vents, Doors, and basic information on Stacks and Discharge Ducts.
- Updated the surface preparation guidance with the latest information from the Society for Protective Coatings (SSPC).
- Created a separate chapter of updated references and placed useful welding symbols into an Appendix.

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CHAPTER 1

INTRODUCTION
INTRODUCTION

This guide is a compilation of standards and construction techniques which have received wide acceptance for the fabrication and installation of ducts designed to convey air and gases, usually contaminated with particulates, fumes, vapors or corrosive aerosols.

1.2 MANUAL CONTENTS

CHAPTER 1 INTRODUCTION

The introduction outlines the format and layout of the manual, and includes a summary of the contents of each chapter.

CHAPTER 2 INDUSTRIAL DUCT APPLICATIONS

This chapter contains various definitions and information related to industrial duct classes, as well as, relevant physical characteristics of materials frequently conveyed in industrial duct systems. It is envisioned that the designer will use the information contained in this chapter or similar information from other sources, such as those listed in Section 2.2, to specify the most appropriate Duct Class for the system under consideration, and the concentration and characteristics of the materials being conveyed. We can not over-emphasize the importance that the specification of the Duct Class and an accurate appraisal of the conveying characteristics of the materials being conveyed have on the successful design of an industrial duct system.

CHAPTER 3 DUCT MATERIALS

This chapter contains detailed information on the physical characteristics of the most common materials used in industrial duct construction. Also included, are brief descriptions of each material type, its most common uses and some limitations that may apply.

CHAPTER 4 DUCT CONSTRUCTION

This chapter contains the basic duct selection tables for round and rectangular industrial ducts, fabricated from commercial grade carbon, galvanized and stainless steels, and aluminum as described in Chapter 3 Duct Materials. This chapter also contains information on thermal expansion and contraction, and common types of seams, joints, and reinforcement used in industrial duct construction.

CHAPTER 5 HANGERS AND SUPPORTS

This chapter contains the necessary tables and instructions to assist the user in selecting from among various designs of hangers and supports for industrial duct applications. It also contains information on typical fasteners, gaskets, caulking and joint sealants.

CHAPTER 6 FITTINGS, VENTS, DOORS, OTHER APPURTEANCES

This chapter contains information on the selection of fittings, vents, access doors and other appurtenances common to many industrial duct applications.

CHAPTER 7 STACKS AND DISCHARGE DUCTS

This chapter contains several different types of common stacks and exhaust outlets found in industrial settings, those under 20 ft in total stack height may be fabricated per Class 1 construction, taller stacks may be guyed or free standing and require special consideration of wind loads and the possible effect of resonant vibration.

CHAPTER 8 SURFACE PREPARATION COMMENTARY FOR STEEL AND CONCRETE SUBSTRATES

This chapter contains surface preparation commentary intended to be an aid in selecting the proper surface preparation method, materials, and specification for steel, other metals, and concrete.

APPENDICES

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