

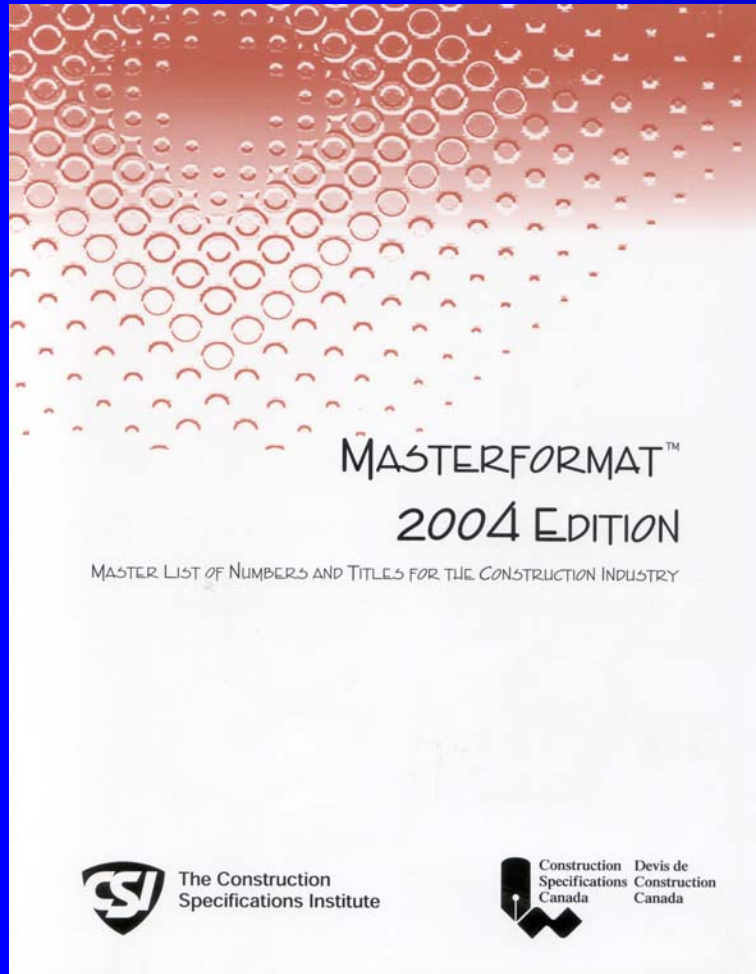
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# **The New MasterFormat™ & Your HVAC Business**



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# Construction Specifications Institute MasterFormat Background

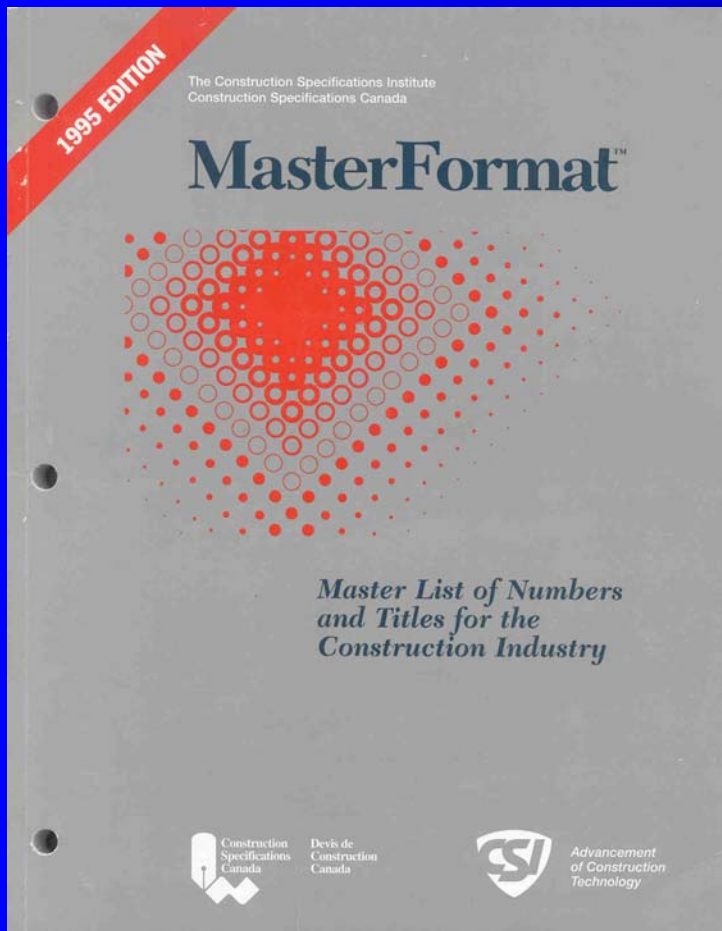


- The Construction Specifications Institute (CSI) is a professional organization whose purpose is to promote better organization and communication of construction project information.
- *MasterFormat* is a trademark of CSI.
- *MasterFormat* is a list of numbers and titles for organizing information about construction requirements, products, and activities into a standard sequence.
- Current *MasterFormat* edition is the 2004 edition.
- *MasterFormat* organizes products and information into 5 groups and 33 major divisions (Level 1 titles).
- Sixteen division format was first introduced in 1963 and was expanded to 49 (16 for future use) in the 2004 edition.

# Construction Specifications Institute Standard Specification Groups

- Procurement & Contracting Requirements Group
  - Procurement & Contracting Requirements (Division 00)
- Specifications Group
  - General Requirements Subgroup (Division 01)
  - Facility Construction Subgroup (Divisions 02 - 19)
  - Facility Services Subgroup (Divisions 20 - 29)
  - Site & Infrastructure Subgroup (Divisions 30 - 39)
  - Process Equipment Subgroup (Divisions 40 - 49)

# Superseded CSI 1995 MasterFormat™ Former 16 Division Format



- Division 1 General Requirements
- Division 2 Site Construction
- Division 3 Concrete
- Division 4 Masonry
- Division 5 Metals
- Division 6 Wood & Plastics
- Division 7 Thermal & Moisture Protection
- Division 8 Doors & Hardware
- Division 9 Finishes
- Division 10 Specialties
- Division 11 Equipment
- Division 12 Furnishings
- Division 13 Special Construction
- Division 14 Conveying systems
- Division 15 Mechanical
- Division 16 Electrical

*Old Divisions 15 & 16 = New Facility Services Subgroup*

# 2004 CSI MasterFormat™ Facility Services Subgroup

Division 21 Fire Suppression

Division 22 Plumbing

Division 23 HVAC

Division 25 Integrated Automation

Division 26 Electrical

Division 27 Communications

Division 28 Electronic Safety & Security

*MasterFormat™ Breakout = Opportunity*

# CSI 2004 MasterFormat™

## Discipline & Trade Jurisdictions

*MasterFormat's organizational structure used in a project manual does not imply how the work is assigned to various design disciplines, trades, or subcontractors. MasterFormat is not intended to determine which particular elements of the project manual are prepared by a particular discipline. Similarly, it is not intended to determine what particular work required by the project manual is the responsibility of a particular trade. A particular discipline or trade is likely to be responsible for subjects from multiple Divisions, as well as from multiple Subgroups.*

*The Construction Specifications Institute, MasterFormat™ 2004 Edition: Master List of Numbers and Titles for the Construction Industry, 2004, p. 12.*



# Contract Documents Defined

## AIA A201/Paragraph 1.1

*The Contract Documents consist of this Agreement, Conditions of the Contract (General, Supplementary and other Conditions), Drawings, Specifications, addenda issued prior to execution of this Agreement, other documents listed in this Agreement and Modifications issued after execution of this Agreement; these form the Contract, and are as fully a part of the Contract as if attached to this Agreement or repeated herein.*

# **Specifications Defined**

## **AIA A201/Paragraph 1.1.6**

*The Specifications are that portion of the Contract Documents consisting of the written requirements for materials, equipment, construction systems, standards and workmanship for the Work, and performance of related services.*



# What Are Specifications?

- Specifications are written instructions concerning project requirements.
- Drawings show what is to be built.
- Specifications describe:
  - How the project is to be constructed.
  - What results are to be achieved.

# Specifications “Specify” Technical Requirements

- Materials
- Workmanship
- Operating Characteristics
- Other Characteristics

# What Makes A Good “Spec”?

- Project Specific
- Accurate & Consistent
- Up To Date
- Concise Language
- Coordinated With Drawings

# Impact Of “Specs”

- Cost
- Schedule
- Quality

# Know “Spec” Requirements



*Education is what  
you get when you  
read the specs ...*

*Experience is what  
you get when you  
don't ...*

# ***HVAC Bid Specification Reference Manual***

- Assist owner and designer in the preparation of a complete HVAC bid package.
- Assist HVAC contractor in the preparation of an accurate and competitive bid.



# Use OF HVAC BSRM: Owner & Designer Outcomes

- Ensure complete HVAC bid package.
- More accurate bids.
- Smaller bid spread.
- Increased installation quality.
- More efficient installation.
- Reduced changes & disputes.
- Greater value.

# Use OF HVAC BSRM: HVAC Contractor Outcomes

- Identify administrative and technical requirements that could impact the cost of performing the work.
- Identify potential problem areas to avoid.
- Prepare competitive bids that are complete that address all of the contract requirements.
- Reduce contractual and construction risk.
- Improve profitability.

# HVAC BSRM Divisions

Division 00 Procurement & Contracting  
Requirements

Division 01 General Requirements

Division 23 Heating, Ventilating, & Air  
Conditioning

# **HVAC BSRM Parts**

Part I Administrative Requirements

Part II Technical Requirements

# HVAC BSRM – Part I

## Administrative Requirements

- Section 1 Introduction
- Section 2 Project Contractual Requirements
- Section 3 Bidding Process & Procedures
- Section 4 CSI MasterFormat™ Overview
- Section 5 Project Procurement & Contracting (Div 00)
- Section 6 Project General Requirements (Div 01)
- Section 7 HVAC Suggested Work Categories
- Section 8 SMACNA Publication Cross Reference
- Section 9 Scope Expansion Opportunities
- Annex A HVAC Work Category Forms

# HVAC BSRM – Part II

## Technical Requirements

- Section 10 HVAC System Requirements (23 00 00)
- Section 11 Facility Fuel Systems (23 10 00)
- Section 12 HVAC Piping & Pumps (23 20 00)
- Section 13 HVAC Air Distribution (23 30 00)
- Section 14 HVAC Air Cleaning Devices (23 40 00)
- Section 15 Central Heating Equipment (23 50 00)
- Section 16 Central Cooling Equipment (23 60 00)
- Section 17 Central HVAC Equipment (23 70 00)
- Section 18 Decentralized HVAC Equipment (23 80 00)



# HVAC BSRM – Section 1

## Introduction

- Introduction
- HVAC System Design
- Manual Purpose
- CSI MasterFormat™
- CSI MasterFormat™ & Trade Jurisdiction
- Manual Overview

# **HVAC BSRM – Section 2**

## **Project Contractual Requirements**

- Introduction
- Contract Documents
- Order Of Precedence
- Project Manual
- Subcontract Documents
- Flow-Through Clause
- Access To Subcontract Documents
- Subcontract Scope Of Work

# HVAC BSRM – Section 3

## Bidding Process & Procedures

- Introduction
- Invitation To Bid
- Competition
- Named Subcontractors
- Bidding Process
- Bid Security
- Value Engineering
- Allowances
- Voluntary Alternates
- Responsible Bidder
- Responsive Bidder
- Bid Shopping
- Bid Clarification
- Bid Withdrawal
- Bid Mistakes

# HVAC BSRM – Section 4

## CSI MasterFormat™ Overview

- Introduction
- Groups
- Procurement & Contracting Group
- Specifications Group
- General Requirements Subgroup
- Facility Construction Subgroup
- Facility Services Subgroup
- Site & Infrastructure Subgroup
- Process Equipment Subgroup
- Division Structure
- Section Structure

# **HVAC BSRM – Section 5**

## **Project Procurement & Contracting**

### **CSI Division 00**

- Project Procurement & Contracting Scope
- Why Is Division 00 So Important
- Need To Review Division 00
- Use Of Division 00
- Introductory Information
- Procurement Requirements
- Contracting Requirements

# HVAC BSRM – Section 6

## Project General Requirements

### CSI Division 01

- Project General Requirements Scope
- 01 00 00 Summary
- 01 20 00 Price & Payment Procedures
- 01 30 00 Administrative Requirements
- 01 40 00 Quality Requirements
- 01 50 00 Temporary Facilities & Controls
- 01 60 00 Product Requirements
- 01 70 00 Execution & Closeout Requirements
- 01 80 00 Performance requirements
- 01 90 00 Life Cycle Requirements



# HVAC BSRM – Section 7

## HVAC Suggested Work Categories

CSI MASTERFORMAT™		WORK CATEGORY			
NUMBER	DESCRIPTION	D	W	S	C
23 00 00	HEATING, VENTILATING, AND AIR-CONDITIONING (HVAC)				
23 01 00	Operation and Maintenance of HVAC Systems				
23 01 10	Operation and Maintenance of Facility Fuel Systems		•		
23 01 20	Operation and Maintenance of HVAC Piping and Pumps		•		
23 01 30	Operation and Maintenance of HVAC Air Distribution	•			
23 01 30.51	HVAC Air Duct Cleaning	•			
23 01 50	Operation and Maintenance of Central Heating Equipment				•
23 01 60	Operation and Maintenance of Central Cooling Equipment				•
23 01 60.71	Refrigerant Recovery/Recycling				•
23 01 70	Operation and Maintenance of Central HVAC Equipment				•
23 01 80	Operation and Maintenance of Decentralized HVAC Equipment				•
23 01 90	Diagnostic Systems for HVAC				•
23 05 00	Common work Results for HVAC				
23 05 13	Common Motor Requirements for HVAC Equipment				•
23 05 16	Expansion Fittings and Loops for HVAC Piping		•		
23 05 19	Meters and Gages for HVAC Piping		•		
23 05 23	General-Duty Valves For HVAC Piping		•		
23 05 29	Hangers and Supports for HVAC Piping and Equipment				•
23 05 33	Heat Tracing for HVAC Piping		•		
23 05 48	Vibration and Seismic Controls for HVAC Piping and Equipment				•
23 05 53	Identification of HVAC Piping and Equipment				•
23 05 63	Anti-Microbial Coatings for HVAC Ducts and Equipment	•			
23 05 66	Anti-Microbial Ultraviolet Emitters for HVAC Ducts and Equipment	•			
23 05 93	Testing, Adjusting, and Balancing for HVAC	•			
23 06 00	Schedules for HVAC				
23 06 10	Schedules for Facility Fuel Service Systems		•		
23 06 20	Schedules for HVAC Piping and Pumps		•		
23 06 20.13	Hydronic Pump Schedule		•		
23 06 30	Schedules for HVAC Air Distribution	•			
23 06 30.13	HVAC Fan Schedule	•			
23 06 30.16	Air Terminal Unit Schedule	•			
23 06 30.19	Air Outlet and Inlet Schedule	•			
23 06 30.23	HVAC Air Cleaning Device Schedule	•			
23 06 50	Schedules for Central Heating Equipment				•
23 06 50.13	Heating Boiler Schedule		•		

- Introduction
- Work Category Matrix
- Customizing The Work Category Matrix

# HVAC BSRM – Section 8

## SMACNA Reference Publications

**TABLE 8-1**  
**SMACNA REFERENCE PUBLICATION & ABBREVIATIONS**

APP	<i>HVAC Systems – Applications</i> (Complete Citation)
ASMIG	<i>Architectural Sheet Metal Inspection Guide</i> (Complete Citation)
ASMM	<i>Architectural Sheet Metal Manual</i> (Complete Citation)
BSAR	<i>Building Systems Analysis &amp; Retrofit Manual</i> (Complete Citation)
COM	<i>HVAC Systems Commissioning Manual</i> , Sheet Metal and Air Conditioning Contractors' National Association, 1 <sup>st</sup> Edition, 1994.
DCS	<i>HVAC Duct Construction Standards: Metal And Flexible</i> , Sheet Metal and Air Conditioning Contractors' National Association, 2 <sup>nd</sup> Edition, 1995 (With November 1997 Addendum No. 1).
DD	<i>HVAC Systems Duct Design</i> , Sheet Metal and Air Conditioning Contractors' National Association, 3 <sup>rd</sup> Edition, 1990.
DEHG	<i>Ducted Electric Heat Guide For Air Handling Systems</i> , Sheet Metal and Air Conditioning Contractors' National Association, 2 <sup>nd</sup> Edition, 1994.
ESAM	<i>Energy Systems analysis and Management</i> (Complete Citation)
FGDC	<i>Fibrous Glass Duct Construction Standards</i> , Sheet Metal and Air Conditioning Contractors' National Association, 7 <sup>th</sup> Edition, 2003.
FRP	<i>Thermoset FRP Duct Construction Manual</i> (Complete Citation)
FSDG	<i>Fire, Smoke And Radiation Damper Installation Guide For HVAC Systems</i> , Sheet Metal and Air Conditioning Contractors' National Association, 5 <sup>th</sup> Edition, 2002.
FSE	<i>Food Service Equipment Guidelines</i> (Complete Citation)
GSSC	<i>Guide for Steel Stack Construction</i> (Complete Citation)
IAQ	<i>Indoor Air Quality: A Systems Approach</i> , Sheet Metal and Air Conditioning Contractors' National Association, 3 <sup>rd</sup> Edition, 1998.
IDC	<i>Accepted Industry Practice for Industrial Duct Design</i> (Complete Citation)
KVS	<i>Kitchen Ventilation Systems And Food Service Equipment Fabrication And Installation Guidelines</i> , Sheet Metal and Air Conditioning Contractors' National Association, 1 <sup>st</sup> Edition, 2001.
LAG	<i>Accepted Industry Practice for Sheet Metal Lagging</i> (Complete Citation)
LTM	<i>HVAC Air Duct Leakage Test Manual</i> , Sheet Metal and Air Conditioning Contractors' National Association, 1 <sup>st</sup> Edition, 1985.
MGW	<i>The Manager's Guide for Welding</i> (Complete Citation)

**TABLE 8-2**  
**HVAC GENERAL REQUIREMENTS (23 00 00)**  
**SMACNA REFERENCE PUBLICATIONS**

CSI MASTERFORMAT™		SMACNA REFERENCE PUBLICATION(S)
NUMBER	DESCRIPTION	
<b>23 00 00</b>	<b>HEATING, VENTILATING, AND AIR-CONDITIONING (HVAC)</b>	
<b>23 01 00</b>	<b>Operation and Maintenance of HVAC Systems</b>	
23 01 10	Operation and Maintenance of Facility Fuel Systems	
23 01 20	Operation and Maintenance of HVAC Piping and Pumps	
23 01 30	Operation and Maintenance of HVAC Air Distribution	IAQ
23 01 30.51	HVAC Air Duct Cleaning	IAQ
23 01 50	Operation and Maintenance of Central Heating Equipment	
23 01 60	Operation and Maintenance of Central Cooling Equipment	
23 01 60.71	Refrigerant Recovery/Recycling	
23 01 70	Operation and Maintenance of Central HVAC Equipment	
23 01 80	Operation and Maintenance of Decentralized HVAC Equipment	
23 01 90	Diagnostic Systems for HVAC	
<b>23 05 00</b>	<b>Common work Results for HVAC</b>	
23 05 13	Common Motor Requirements for HVAC Equipment	DD
23 05 16	Expansion Fittings and Loops for HVAC Piping	
23 05 19	Meters and Gages for HVAC Piping	TAB
23 05 23	General-Duty Valves For HVAC Piping	
23 05 29	Hangers and Supports for HVAC Piping and Equipment	DCS
23 05 33	Heat Tracing for HVAC Piping	
23 05 48	Vibration and Seismic Controls for HVAC Piping and Equipment	SEIS
23 05 53	Identification of HVAC Piping and Equipment	
23 05 63	Anti-Microbial Coatings for HVAC Ducts and Equipment	
23 05 66	Anti-Microbial Ultraviolet Emitters for HVAC Ducts and Equipment	
23 05 93	Testing, Adjusting, and Balancing for HVAC	TAB
<b>23 06 00</b>	<b>Schedules for HVAC</b>	
23 06 10	Schedules for Facility Fuel Service Systems	
23 06 20	Schedules for HVAC Piping and Pumps	
23 06 20.13	Hydronic Pump Schedule	
23 06 30	Schedules for HVAC Air Distribution	
23 06 30.13	HVAC Fan Schedule	
23 06 30.16	Air Terminal Unit Schedule	
23 06 30.19	Air Outlet and Inlet Schedule	
23 06 30.23	HVAC Air Cleaning Device Schedule	
23 06 50	Schedules for Central Heating Equipment	
23 06 50.13	Heating Boiler Schedule	

# HVAC BSRM – Section 9

## Scope Expansion Opportunities

- Introduction
- Identifying Scope Expansion Opportunities
- Division 15 – Metals
- Section 07 10 00 – Waterproofing
- Section 07 72 13 – Manufactured Roof Curbs
- Section 08 91 00 – Louvers & Vents
- Section 10 22 00 – Partitions
- Section 10 51 00 – Lockers
- Section 10 82 00 – Grills & Screens
- Section 14 91 00 – Chutes
- Other Scope Expansion Opportunities

# HVAC BSRM – Part II

## Technical Requirements

- Section 10 HVAC System Requirements (23 00 00)
- Section 11 Facility Fuel Systems (23 10 00)
- Section 12 HVAC Piping & Pumps (23 20 00)
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- Section 18 Decentralized HVAC Equipment (23 80 00)

***Questions?***