

# **ARCHITECTURAL SHEET METAL MANUAL**

SIXTH EDITION — SEPTEMBER, 2003



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

4201 Lafayette Center Drive  
Chantilly, VA 20151-1209  
[www.smacna.org](http://www.smacna.org)

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4201 Lafayette Center Drive  
Chantilly, VA 20151-1209

Printed in the U.S.A.

FIRST EDITION – JUNE 1965  
SECOND EDITION – MAY 1968  
THIRD EDITION – AUGUST 1979  
FOURTH EDITION – OCTOBER 1987  
FIFTH EDITION – SEPTEMBER 1993  
SIXTH EDITION – SEPTEMBER 2003  
SECOND PRINTING – NOVEMBER 2006  
THIRD PRINTING – FEBRUARY 2010

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## FOREWORD

This sixth edition of the Architectural Sheet Metal Manual has many changes and several additions. Changes include a new chapter on historical restoration, additional and revised tables in support of commentary and illustrations, additional commentary and illustrations in support of newer construction techniques, an expanded appendix covering issues that have received industry emphasis since the last edition—such as moisture and maintenance—and many clarifications. Also, a pair of “fast look-up keys” has been placed in front of a new table of contents format to assist users with the speedier location of information in this nearly 500-page technical document. Readers are especially urged to refer to the data and references in the appendices.

Architectural sheet metal elements can make otherwise ordinary buildings distinguished. Metal roofs, column covers, domes and spires create character and can make a dramatic architectural statement. Architects and designers can use unique metals, contrasting roof seam types, shaped metal cornices, curved finials, and other attributes provided only by custom sheet metal to best convey the expressed desires of the most forward-thinking owners. Roofs are an especially important architectural element and, although there are many proprietary roof systems currently on the market, the unique attributes of custom-fabricated metal deserves the innovative designer’s first and last consideration. By their nature, proprietary roof systems are designed for a mass market and a certain degree of architectural uniqueness is lost with the use of packaged systems. Packaged systems typically rely heavily on sealants as weatherproofing and standard package flashing. A custom sheet metal contractor who installs a packaged roof system can provide custom detailing and job-specific flashing that will greatly enhance the roof’s overall weathertightness. Custom sheet metal has the inherent advantages of building-specific design, soldered joints, and other beneficial characteristics that can only be realized through the use of custom sheet metal.

In order to provide designers a broader choice in application and design and to reflect local practices as well as varying geographic conditions, this manual often includes alternative methods of design and construction. Not all local area practices are discussed or illustrated as this would be impractical. Deviations from included recommendations may often be permissible, depending upon verification of satisfactory service under conditions other than those covered in this manual. Careful examination of the information herein and local climate conditions will enable the architect to select the proper detail for practically any architectural sheet metal requirement. Architects, however, are strongly encouraged to consult local sheet metal contractors about any application of architectural sheet metal. Local sheet metal contractors can offer technical guidance and make suggestions on the choice of metals, the relative economies of different techniques, and can otherwise share their experience with designers. You can find a local SMACNA contractor using the online member list at <http://www.smacna.org> for specific technical and design assistance. Architects can use elements from this manual as a guide in developing an architectural sheet metal section of their project specifications. Direct reference to this manual by figure or detail number is encouraged.

SMACNA expresses appreciation to the committees and task forces, architects, sheet metal contractors, journeymen sheet metalworkers, manufacturers, and other interested individuals and companies that have contributed time, knowledge and experience in the development of this and former editions. SMACNA’s technical staff also gains insight into the need for additions and changes based on the incoming technical inquiries—a service offered to the public via the SMACNA Website—but also an ongoing feedback path for ideas and subject areas of industry interest. Many drawings, much commentary and suggestions have been consigned to further study and, as the association is able to make additional clarification for various applications, it will do so.

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



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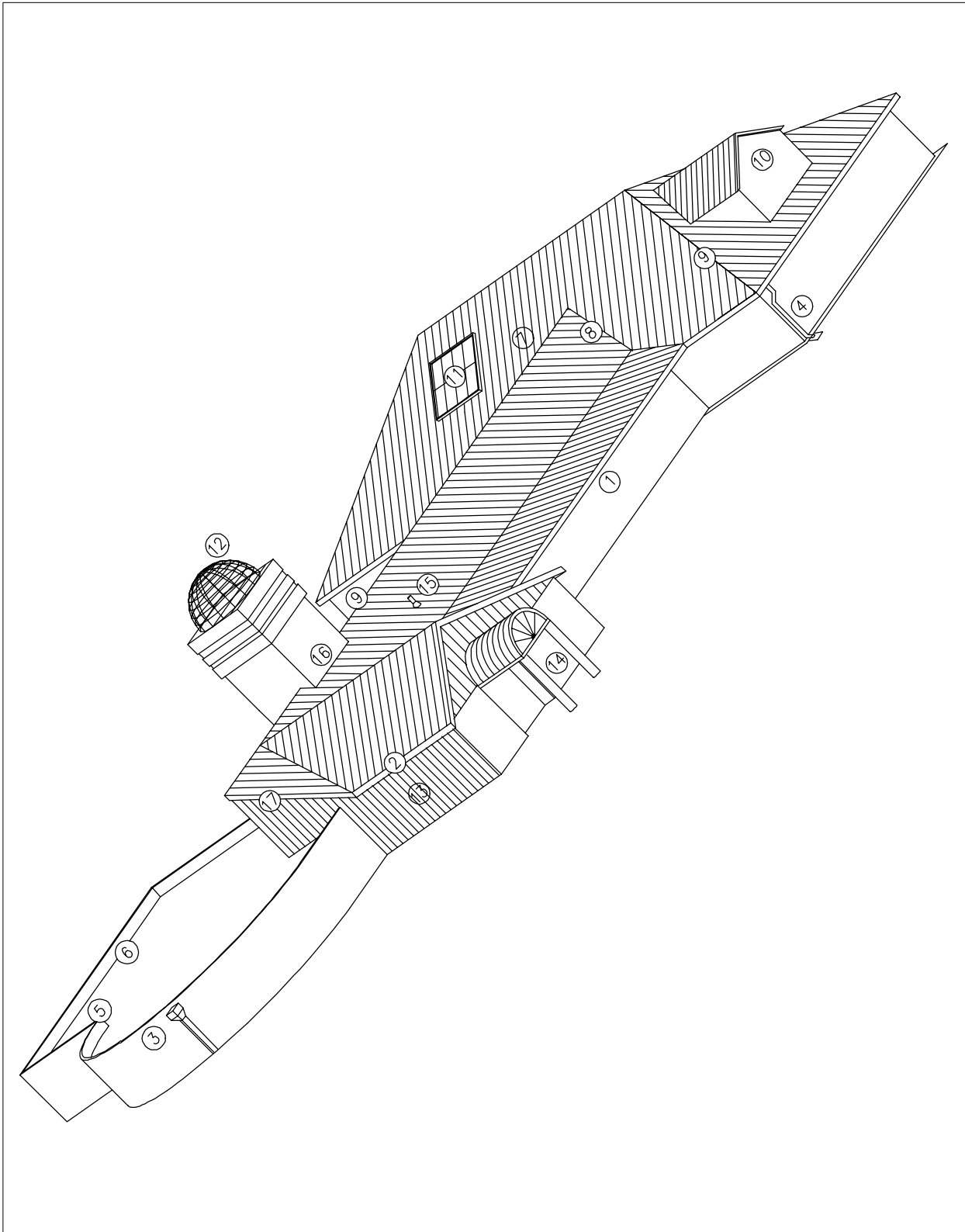
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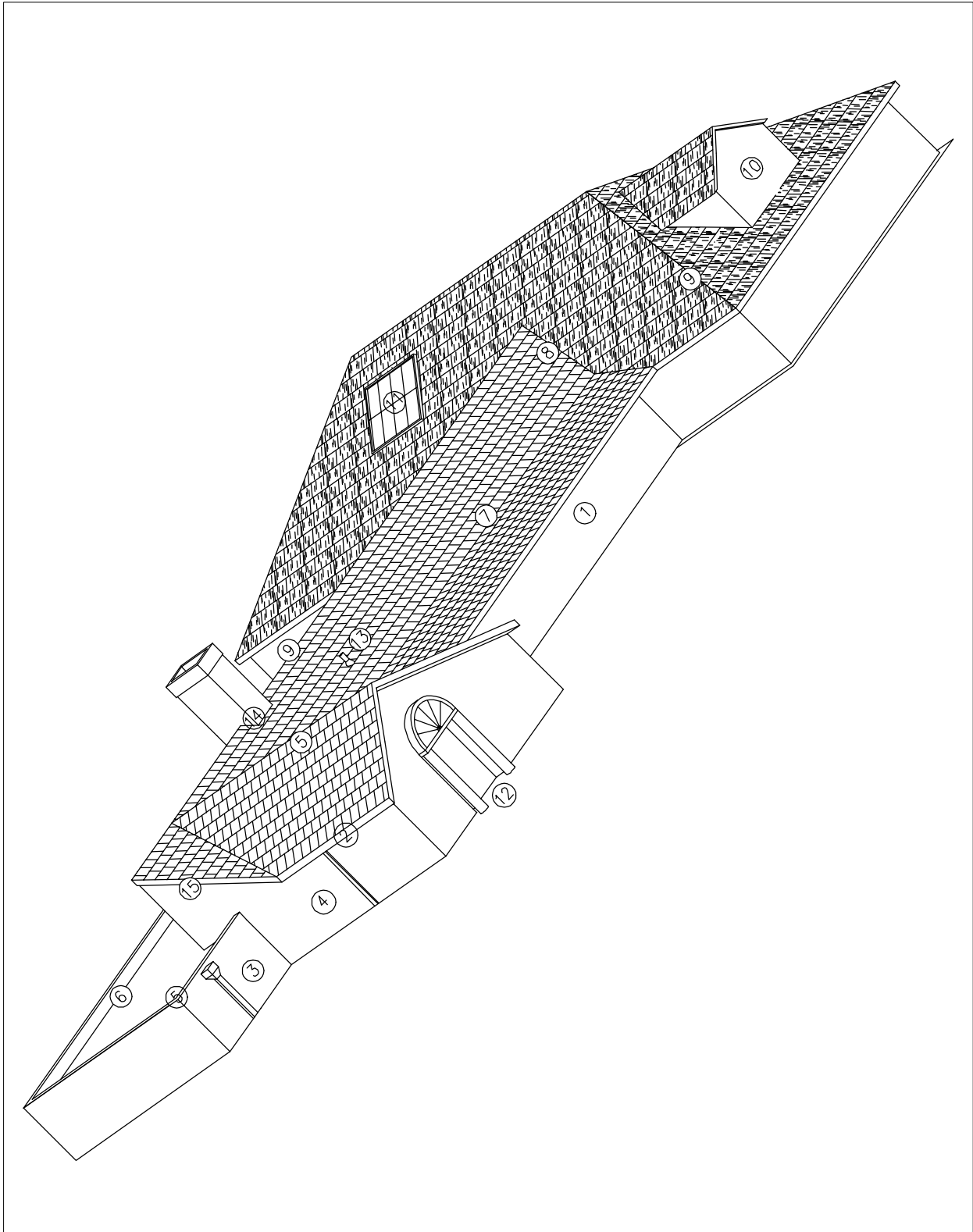
**TYPICAL METAL ROOF PLAN**

## TYPICAL METAL ROOF PLAN

The master isometric drawing in this figure contains keys to related components and other Figure Numbers that are listed below. The location of each key on the illustration is generally recognizable as a gutter, downspout, eave, ridge, valley, hip, rake, headwall,

pitch transition, coping, or other component. Associated Figure Numbers address some aspect of design or installation. Consult the Table of Contents to identify the subject covered by each listed Figure Number and to pursue specific interests. Use of the key system should improve lookup of references and facilitate in achieving a well-designed, coordinated roofing and flashing system.

Item Number	Component	Figure Numbers
1	Hanging Gutter	1-1, 1-2, 1-3, 1-5, 1-6, 1-7, 1-17, 1-18, 1-19, 1-20, 1-24, 6-15
2	Built-In Gutter	1-4, 1-5, 1-8, 1-9, 1-10, 1-21, 1-23, 1-24, 6-15
3	Scupper/Conductor Heads	1-25, 1-26, 1-27
4	Downspouts	1-31, 1-32, 1-33, 1-34, 1-35, 1-36
5	Formed Metal Copings	3-1, 3-2, 3-3, 3-4, 3-5, 3-6, 3-7, 3-8, 3-9
6	Counter Flashing	4-3, 4-4, 4-5
7	Metal Roofs	6-1, 6-4, 6-5, 6-6, 6-7, 6-8, 6-9
8	Valley Flashing	6-6, 6-9
9	Ridge/Hip Flashing	6-16
10	Dormer Flashing	4-21, 6-6, 6-9, 6-16, 6-17
11	Roof Penetrations/Skylights	6-17, 6-18, 6-19, 6-20, 8-4
12	Domes	6-24
13	Metal Wall Systems	6-25, 6-26, 6-27, 6-28, 6-30, 6-31, 6-32, 6-33
14	Column Covers	8-10
15	Roof Penetration	6-18
16	Headwall Flashing	6-6, 6-16
17	Roof Rake/Edge	6-6, 6-9, 6-11, 6-12, 6-13, 6-17, 6-30



**TYPICAL SHINGLE/TILE/SLATE-ROOF PLAN**

## TYPICAL SHINGLE/TILE/SLATE-ROOF PLAN

The master isometric drawing in this figure contains keys to related components and other Figure Numbers that are listed below. The location of each key on the illustration is generally recognizable as a gutter, downspout, eave, ridge, valley, hip, rake, chimney,

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2	Built-In Gutter	1-4, 1-5, 1-8, 1-9, 1-10, 1-21, 1-24, 6-15
3	Scupper/Conductor Heads	1-25, 1-26, 1-27
4	Downspouts	1-31, 1-32, 1-33, 1-34, 1-35, 1-36
5	Formed Metal Copings	3-1, 3-2, 3-3, 3-4, 3-5, 3-6, 3-7, 3-8, 3-9
6	Counter Flashing	4-3, 4-4, 4-5
7	Roof Transition	4-22
8	Valley Flashing	4-9, 4-10
9	Ridge/Hip Flashing	4-11
10	Dormer Flashing	4-7, 4-8, 4-17, 4-18, 4-21, 4-22
11	Roof Penetrations/Skylights	8-4
12	Column Covers	8-10
13	Roof Penetration	4-19
14	Headwall/Chimney Flashing	4-7, 4-17, 4-18, 4-21
15	Roof Edge	4-22



<b>FOREWORD</b> .....	<b>iii</b>
<b>ARCHITECTURAL SHEET METAL TASK FORCE</b> .....	<b>iv</b>
<b>NOTICE TO USERS OF THIS PUBLICATION</b> .....	<b>v</b>
<b>TYPICAL METAL ROOF PLAN</b> .....	<b>viii</b>
<b>TYPICAL SHINGLE/TILE/SLATE-ROOF PLAN</b> .....	<b>x</b>
<b>TABLE OF CONTENTS</b> .....	<b>xiii</b>
 <b>CHAPTER 1 ROOF DRAINAGE SYSTEMS</b>	
DESIGN OF ROOF DRAINAGE SYSTEMS .....	1.1
ROOF DRAINAGE .....	1.1
ROOF AREA TO BE CONSIDERED .....	1.1
RAINFALL INTENSITY–DOWNSPOUT CAPACITY .....	1.1
DOWNSPOUT SIZING CONSIDERATIONS .....	1.1
Table 1-1 Design Areas for Pitched Roofs .....	1.1
Table 1-2 Rainfall Data and Drainage Factors .....	1.2
Table 1-2 Rainfall Data and Drainage Factors (Continued) .....	1.3
Table 1-3 Dimensions of Standard Downspouts .....	1.4
GUTTER SIZING .....	1.5
RECTANGULAR GUTTER SIZING .....	1.5
IRREGULAR CROSS SECTION GUTTER SIZING .....	1.5
HALF ROUND GUTTER SIZING .....	1.5
Table 1-4 Sloped Roof Gutters Maximum Roof Area for Gutters .....	1.6
Chart 1-1 Width of Rectangular Gutters for Given Roof Areas and Rainfall Intensities .....	1.7
Chart 1-2 Half Round Gutter Selection Width Required for Given Roof Areas and Rainfall Intensities .....	1.8
Table 1-5 Recommended Minimum Gages for Gutter .....	1.11
Figure 1-1 Rectangular Gutter Design .....	1.11
Figure 1-2 Rectangular Type Gutter Styles .....	1.13
Figure 1-3 Manufactured Half Round and Ogee Gutters .....	1.15
Figure 1-4 Built-In Gutter Design .....	1.17
Table 1-6 Maximum Distance Between Expansion Joint and Downspout in Feet (Meters) for Built-In Gutter .....	1.18
Table 1-7 Installation Values for “E” Section A-A of Figures 1-5, 1-6, 1-7, 1-8 and 1-10 .....	1.20
Figure 1-5 Allowances For Gutter Expansion .....	1.21
Figure 1-6 Lap Type Gutter Expansion Joint .....	1.23



Figure 1-7	Butt Type Gutter Expansion Joint .....	1.25
Figure 1-8	Built-In Gutter Expansion Joint .....	1.27
Figure 1-9	Built-In Gutter Expansion Joint — At Wall .....	1.29
Figure 1-10	Built-In Expansion Joint — Heavy Gage Gutter .....	1.31
Figure 1-11	Combination Scupper and Gutter .....	1.33
Table 1-8	Recommended Sizes—Gutter Brackets or Straps .....	1.34
Figure 1-12	Hanging Gutter Installations — General .....	1.35
Figure 1-13	Hanging Gutter Installations — Bracket Support .....	1.37
Figure 1-14	Hanging Gutter Installations — Alternate Supports .....	1.39
Figure 1-15	Concealed Hanging Gutters .....	1.41
Figure 1-16	Hanging Gutter Installations — Heavy Gutter .....	1.43
Figure 1-17	Hanging Gutter Installations — Sloped Roof .....	1.45
Figure 1-18	Hanging Gutter Installations — Sloped Roof .....	1.47
Figure 1-19	Hanging Gutter Installations — Sloped Roof .....	1.49
Figure 1-20	Hanging Gutter Installations — Half Round .....	1.51
Figure 1-21	Built-In Gutter Installation .....	1.53
Figure 1-22	Water Diverter Design and Installation .....	1.55
Figure 1-23	Built-In Gutter Installation .....	1.57
Figure 1-24	Gutter Accessories — Screens and Outlets .....	1.59
Figure 1-25	Conductor Heads — Typical .....	1.61
Figure 1-26	Scupper Design and Installation .....	1.63
Figure 1-27	Scupper Design and Installation .....	1.65
Figure 1-28	Scupper — Through Fascia with Conductor Head .....	1.67
Figure 1-29	Scupper — Design and Installation .....	1.69
Figure 1-30	Scupper — Overflow Type — Design and Installation .....	1.71
Table 1-9	Dimensions and Minimum Gages of Standard Downspouts .....	1.72
Figure 1-31	Downspouts — Manufactured .....	1.73
Figure 1-32	Downspouts — Shop Fabricated .....	1.75
Figure 1-33	Downspout — Gutter Connections .....	1.77
Figure 1-34	Downspouts — Hanger Design .....	1.79
Figure 1-35	Shop-Fabricated Downspout Hangers .....	1.81
Figure 1-36	Splash Pan .....	1.83
Figure 1-37	Formed Roof Sumps .....	1.85
Figure 1-38	Roof Drains .....	1.87

## CHAPTER 2 GRAVEL-STOP-FASCIA

Figure 2-1 Formed Gravel-Stop-Fascia — Design Data .....	2.3
Table 2-1 Gravel-Stop and Cap Fascia Design .....	2.4
Figure 2-2 Formed Gravel-Stop-Fascia — Design Data .....	2.5
Figure 2-3 Roof-Fascia-Soffit Transitions .....	2.6
Figure 2-4 Fascia and Soffit Design Data .....	2.7
Figure 2-5 Formed Gravel-Stop-Fascia — Joint Systems .....	2.9
Figure 2-6 Cap Fascia — Installation .....	2.11
Figure 2-7 Formed Gravel-Stop-Fascia — Soffit Installation .....	2.13
Figure 2-8 Formed Gravel-Stop-Recessed — Installation .....	2.15
Figure 2-9 Heavy-Gage Formed Gravel-Stop-Fascia — Installation .....	2.17
Figure 2-10 Heavy-Gage Gravel-Stop-Fascia — Joints and Corners .....	2.19
Figure 2-11 Heavy-Gage Gravel-Stop-Fascia — Installations .....	2.21
Figure 2-12 Roof Paver Retention .....	2.23
Figure 2-13 Roof Membrane Protection .....	2.25
Figure 2-14 Roof Paver Systems — Outer Edge .....	2.27
Figure 2-15 Roof Paver Systems — Edge Retention .....	2.29
Figure 2-16 Roof Paver Systems — Scupper Drain .....	2.31

## CHAPTER 3 COPINGS

Figure 3-1 Formed Metal Copings — Design Data .....	3.3
Table 3-1 Coping Design .....	3.4
Figure 3-2 Locks and Seams .....	3.6
Figure 3-3 Locks and Seams (Continued) .....	3.7
Figure 3-4 Formed Metal Copings — Typical Profiles .....	3.9
Figure 3-5 Formed Metal Copings — Curved .....	3.11
Figure 3-6 Formed Metal Copings — with Flashing .....	3.13
Figure 3-7 Formed Metal Copings and Relief Joint .....	3.15
Figure 3-8 Formed Metal Copings — Dual Walls .....	3.17
Figure 3-9 Parapet Wall Covering .....	3.19

## CHAPTER 4 FLASHING

Figure 4-1 Through-Wall Flashing — Installation .....	4.3
Figure 4-2 Through-Wall Flashing — Cavity Wall .....	4.5
Figure 4-3 Through-Wall Flashing — Installation-at-Coping .....	4.7
Figure 4-4 Counter Flashing Systems — Installation .....	4.9
Figure 4-5 Counter Flashing Systems — Installation .....	4.11
Figure 4-6 Counter Flashing Systems — Installation .....	4.13
Figure 4-7 Counter Flashing Systems — Installation .....	4.15
Figure 4-8 Base and Counter Flashing Systems — Installation .....	4.17



Figure 4-9 Counter Flashing Systems — Installation .....	4.19
Figure 4-10 Valley Flashing Installation .....	4.21
Figure 4-11 Valley Flashing Installation .....	4.23
Figure 4-12 Hip and Ridge Flashing .....	4.25
Figure 4-13 Ridge Flashing at Mansard Roof .....	4.27
Figure 4-14 Roof Penetration Flashing — Pipes .....	4.29
Figure 4-15 Roof Penetration Flashing — Pipes .....	4.31
Figure 4-16 Roof Penetration Flashing — Structural Steel .....	4.33
Table 4-1 Rooftop Equipment Elevation .....	4.34
Figure 4-17 Equipment Support Flashing .....	4.35
Figure 4-18 Chimney Flashing .....	4.37
Figure 4-19 Chimney Flashing (Stucco) .....	4.39
Figure 4-20 Sloping Roof Penetration Flashing .....	4.41
Figure 4-21 Ledge Flashing .....	4.43
Figure 4-22 Dormer-Head-Sill Flashing for Frame Construction .....	4.45
Figure 4-23 Shingle Roof Flashing .....	4.47
Figure 4-24 Termite Shields .....	4.49

## **CHAPTER 5 BUILDING EXPANSION**

BUILDING EXPANSION JOINTS (GENERAL) .....	5.1
Figure 5-1 Building Expansion Joints — Roof .....	5.3
Figure 5-2 Expansion Joint Intersection .....	5.5
Figure 5-3 Building Expansion Joints — Roof at Gravel-Stop .....	5.7
Figure 5-4 Building Expansion Joints — Roof .....	5.9
Figure 5-5 Building Expansion Joints — Roof .....	5.11
Figure 5-6 Building Expansion Joints — Roof-to-Wall .....	5.13
Figure 5-7 Building Expansion Joints — Wall .....	5.15
Figure 5-8 Building Expansion Joints — in Slabs .....	5.17

## **CHAPTER 6 METAL ROOF AND WALL SYSTEMS**

METAL SIDING AND ROOFING COMMENTARY .....	6.4
PORTABLE ROLL FORMERS .....	6.4
PREPAINTED METALS COMMENTARY .....	6.4
Figure 6-1 Roof Support Systems .....	6.7
Figure 6-2 Metal Roof Deck — Typical Profiles .....	6.9
Figure 6-3 Flat Seam Roofs .....	6.11
Table 6-1 Gage and Pan Widths for Standing Seam Roofs .....	6.14
Figure 6-4 Curved-Flat Seam Dormer Roof .....	6.13
Figure 6-5 Standing Seam Roofs .....	6.15
Figure 6-6 Standing Seam Roofs .....	6.16

Figure 6-7	Standing Seam Roofs	6.17
Figure 6-8	Batten Seam Roofs	6.19
Figure 6-9	Batten Seam Roofs	6.20
Figure 6-10	Batten Seam Roofs	6.21
Table 6-2	Recommended Gages and Pan Widths Bermuda Roofs	6.22
Figure 6-11	Bermuda Type Roofs	6.23
Figure 6-12	Bermuda Type Roofs	6.24
Figure 6-13	Bermuda Type Roofs	6.25
Figure 6-14	Roof Transitions	6.27
Figure 6-15	Metal Roof Eaves Conditions	6.29
Figure 6-16	Eaves with Ice Dams	6.31
Figure 6-17	Ridge, Hip, and Headwall Flashing	6.33
Figure 6-18	Gable and Rake Flashing	6.35
	<b>ROOF PANEL PENETRATIONS — GENERAL</b>	6.36
Figure 6-19	Roof Panel Penetration	6.37
Figure 6-20	Roof Panel Penetration	6.39
Figure 6-21	Roof Panel Penetration	6.41
Figure 6-22	Mansard and Equipment Screens	6.43
Figure 6-23	Mansard Roofs	6.45
Figure 6-24	Window Bay and Ornamental Roofs	6.47
Figure 6-25	Domes and Conical Roofs	6.49
Figure 6-26	Wall System Features	6.50
Figure 6-27	Wall System Features	6.51
Figure 6-28	Wall System Features	6.52
Figure 6-29	Metal Siding and Roofing — Typical Profiles	6.53
Figure 6-30	Head, Soffit, and Sill Flashing	6.55
Figure 6-31	Wall to Roof Flashing	6.57
Figure 6-32	Metal Wall Parapet	6.59
Figure 6-33	Wall Panel Corners	6.61
Figure 6-34	Wall Panel Corners	6.63
Figure 6-35	Wall Penetration Flashing	6.65
Figure 6-36	Wall Penetration Flashing	6.67
Figure 6-37	Wall Penetration Flashing	6.69
Figure 6-38	Wall Penetration Flashing	6.71

**CHAPTER 7 LOUVERS AND SCREENS**

Figure 7-1	Formed Louvers	7.3
Table 7-1	Louver Blade and Frame Construction Details	7.4
Figure 7-2	Formed Louvers — Stationary	7.5
Figure 7-3	Formed Louvers — Adjustable	7.7



Figure 7-4	Formed Louvers — Adjustable	7.9
Figure 7-5	Extruded Louvers	7.11
Figure 7-6	Louver Mullion Covers	7.13
Figure 7-7	Louver Screens	7.15
Figure 7-8	Louvered Enclosures	7.17
Figure 7-9	Louvered Penthouse	7.19
Figure 7-10	Sunshade — Louvered	7.21
Figure 7-11	Sunshade Canopy	7.23

## CHAPTER 8 OTHER METAL STRUCTURES

Figure 8-1	Gravity Ventilators — Gooseneck	8.3
Figure 8-2	Ventilators — Rotating	8.5
Figure 8-3	Ventilators — Stationary	8.7
Figure 8-4	Plastic Skylights	8.9
Figure 8-5	Roof Scuttles	8.11
Figure 8-6	Smoke Hatches	8.13
Figure 8-7	Curtains — Draft or Fire	8.15
Figure 8-8	Snow Guards	8.17
Figure 8-9	Cornerstone Boxes	8.19
Figure 8-10	Column Covers	8.21
Figure 8-11	Corner Guards	8.23
Figure 8-12	Interior Wall Lining	8.25
Figure 8-13	Partition and Column Closures and Mullion Covers	8.27
Figure 8-14	Planter Box Liners	8.29
Figure 8-15	Drapery Pockets	8.31
Figure 8-16	Lighting Troughs	8.33
Figure 8-17	Hoods — Ornamental	8.35
Figure 8-18	Linen and Trash Chutes	8.37

## CHAPTER 9 HISTORICAL RESTORATION

CORNICE RESTORATION	9.1	
ASSESSMENT	9.1	
REPAIR AND REPLACEMENT	9.1	
Figure 9-1	Cornices	9.3
Figure 9-2	Cornices	9.5
Figure 9-3	Formed Skylights	9.7
Figure 9-4	Formed Skylight-Mutin	9.9
Figure 9-5	Spires	9.11
HISTORIC PRESERVATION PRE-QUALIFICATION	9.14	
SPECIAL QUALIFICATION REQUIREMENTS	9.14	



## APPENDIX A THICKNESS AND WEIGHT OF SHEET METALS

THICKNESS AND WEIGHT OF SHEET METALS .....	A.1
Table A-1 Thickness and Weight of Galvanized and Black Iron .....	A.1
Table A-2 Thickness and Weight of Copper .....	A.2
Table A-3 Nominal Weight of Lead-Coated Copper Sheet .....	A.2
Table A-4 Thickness and Weight of Stainless Steel .....	A.3
Table A-5 Thickness and Weight of Aluminum .....	A.4
Table A-6 Thickness and Weight of Zinc-Tin Alloy .....	A.5
Table A-7 Thickness and Weight of Sheet Lead .....	A.5
Table A-8 Expansion of Building Materials .....	A.6
Table A-9 Metric Conversion Charts Inches into Millimeters and Feet to Meters .....	A.7

## APPENDIX B METALS APPLICATION AND SPECIFICATIONS REFERENCES

ALUMINUM .....	B.1
COPPER AND LEAD COATED COPPER .....	B.2
LEAD .....	B.3
GALVANIZED STEEL .....	B.4
STAINLESS STEEL .....	B.5
ZINC-TIN ALLOY .....	B.7
TERNE COATED STAINLESS .....	B.8
ANODIZING .....	B.9
PORCELAINS .....	B.9
SILICONIZED ACRYLIC AND POLYESTER PAINTS .....	B.10
POLYURETHANES .....	B.10
FLUOROPOLYMERS .....	B.10
POWDERED METAL COATINGS .....	B.10

## APPENDIX C GALVANIC CORROSION

GALVANIC SCALE .....	C.1
----------------------	-----

## APPENDIX D SHEET METAL ROOF TEST REPORT

INTRODUCTION .....	D.1
METAL ROOF DESCRIPTION .....	D.1
CONCLUSIONS .....	D.3
Figure D-1 Sheet Metal Roof Test Report .....	D.4
Figure D-2 Sheet Metal Roof Test Report .....	D.5
Figure D-3 Sheet Metal Roof Test Report .....	D.6
Figure D-4 Sheet Metal Roof Test Report .....	D.7



**APPENDIX E CUSTOM FABRICATED METAL ROOFING SPECIFICATIONS**

DESCRIPTION ..... E.1  
QUALITY ASSURANCE ..... E.1  
PERFORMANCE AND TESTING ..... E.3  
SUBMITTALS ..... E.5  
FABRICATION ..... E.8  
IDENTIFICATION, DELIVERY, STORAGE AND HANDLING OF MATERIALS ..... E.9  
INSTALLATION ..... E.10  
ACCEPTANCE AND CLEAN UP ..... E.11

**APPENDIX F MOISTURE AND MAINTENANCE OF BUILDING ENVELOPES**

MOISTURE TRANSFER METHODS ..... F.1  
CONTROLS AT THE DESIGN STAGE ..... F.1  
AIR LEAKAGE ..... F.2  
DIRECTION OF LAPS ..... F.2  
DEHUMIDIFICATION ..... F.2  
INVESTIGATING MOISTURE PROBLEMS FROM A MAINTENANCE STANDPOINT ..... F.2  
REPLACING AND REPAIRING ..... F.3  
OTHER THINGS TO LOOK FOR ..... F.3  
DESIGN DOCUMENT REFERENCES ..... F.4

**APPENDIX G SCUPPER SIZING**

SCUPPER SIZING PROCEDURES ..... G.1  
Table G-1 Scupper Capacity in GPM ..... G.3  
Table G-1M Scupper Capacity in LPS ..... G.3  
Table G-2 Downspout Leader Capacity ..... G.4  
Figure G-1 Weir ..... G.4

**APPENDIX H SMACNA REPRINTS 1929 STANDARD**

**APPENDIX I ADDITIONAL INFORMATIONAL PUBLICATIONS**

**APPENDIX J MECHANICAL FASTENERS**

MECHANICAL FASTENERS ..... J.1  
NAILS ..... J.1  
Figure J-1 Nail Shank Types ..... J.1  
Figure J-2 Nail Points ..... J.2  
Figure J-3 Nail Shapes ..... J.2  
Figure J-4 Nail Sizes ..... J.3  
SCREWS ..... J.4



Figure J-5	Butress and Standard Thread Screw Shanks .....	J.4
Figure J-6	Screw Withdrawal Resistance .....	J.5
Figure J-7	Additional Screw Information .....	J.5
Figure J-8	Screw Points .....	J.6
Figure J-9	Self-Drilling and Self-Tapping Screw Function Phases .....	J.6
Figure J-10	Screw Head Shapes .....	J.7
	FASTENER EVALUATION .....	J.8
	SOLDERING .....	J.9
Figure J-11	The Greatest Usable Heat is at the Largest Part of the Tinned Area ....	J.10

**APPENDIX K FORMER COMMITTEE MEMBERS AND OTHER CONTRIBUTORS**

**INDEX**

