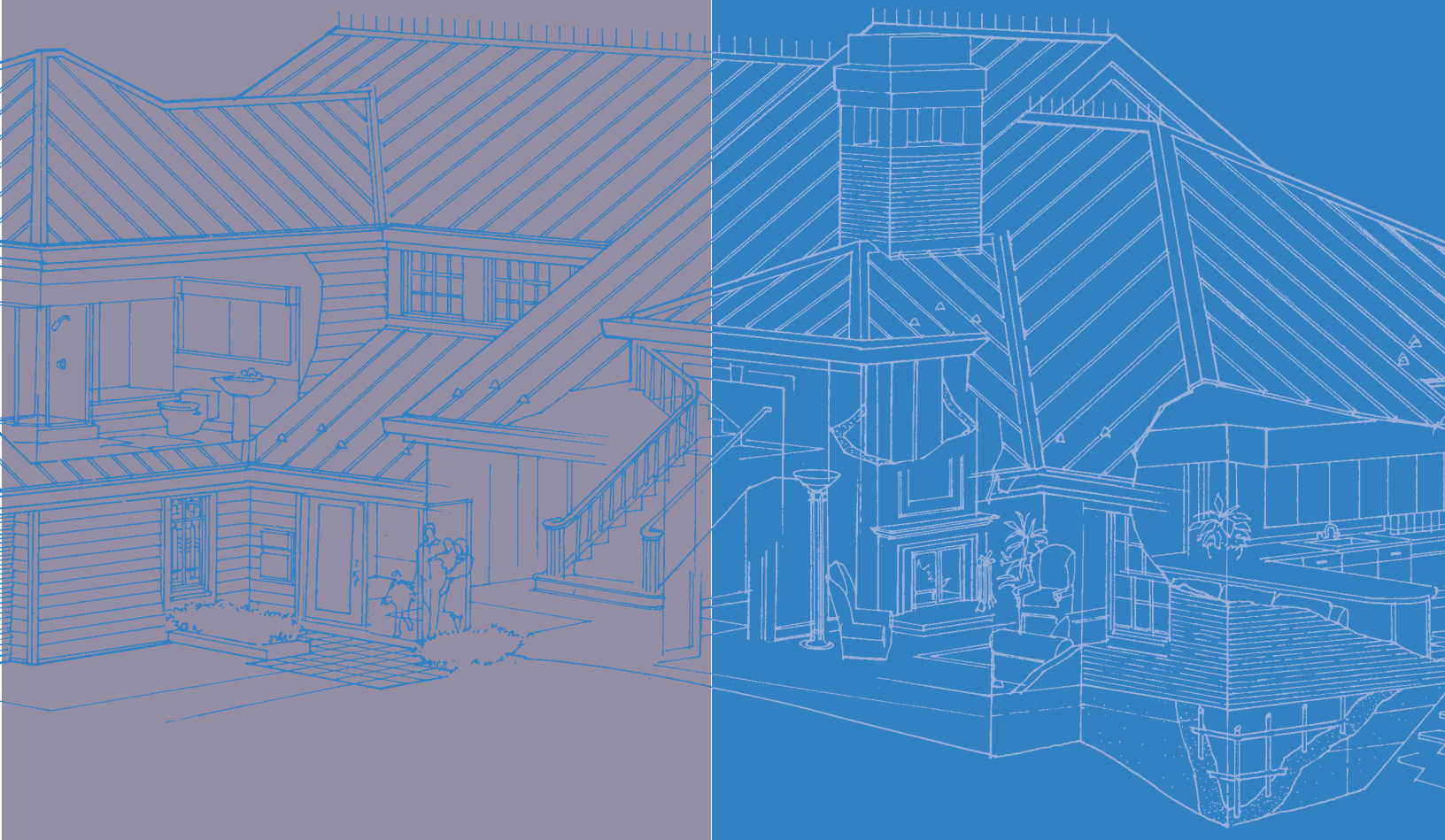
DESIGNER

HANDBOOK

STAINLESS STEEL FOR RESIDENTIAL APPLICATIONS



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STAINLESS STEEL is not a single alloy, but rather the name applies to a group of iron based alloys containing a minimum 10.5% chromium. Other elements are added and the chromium content increased to improve the corrosion resistance, improve heat resisting properties, enhance mechanical properties, and/or to improve fabricating characteristics. There are over 50 stainless steel grades that were originally recognized by the American Iron and Steel Institute (AISI). Three general classifications are used to identify stainless steel. They are:

1. Metallurgical structure.
2. The AISI numbering system (200, 300 and 400 Series numbers).
3. The Unified Numbering System, which was developed by the American Society for Testing Materials (ASTM) and the Society of Automotive Engineers (SAE) to apply to all commercial metals and alloys.

The various types of stainless steel are detailed in a designer handbook *"Design Guidelines for the Selection and Use of Stainless Steel"* available from the Specialty Steel Industry of North America (SSINA). Several other publications are also available, including: *"Stainless Steel Fabrication," "Stainless Steel Fasteners," "Stainless Steel Finishes," "Stainless Steel Specifications,"* and *"Stainless Steel Architectural Facts,"* to mention a few.

For a Directory of Representative Suppliers, refer to inside back cover.

THE GENERALLY ACCEPTED TERMINOLOGY "STAINLESS STEEL" applies to iron-base alloys that contain at least 10.5% chromium. Many people are familiar with chromium as a corrosion-resistant coating on the surface of chrome-plated automobile bumpers. In stainless steels, however, the chromium is added during the melting of the steel and forms a homogeneous mixture with the iron and other alloying elements, such as nickel, molybdenum, or titanium, which may be present to enhance fabricating and corrosion-resistant properties.

ALLOYS

The four stainless steels most often specified for architectural applications are Types 304 and 316, and their low carbon variations, 304L and 316L. All four have excellent corrosion resistance, high strength and ease of fabrication.

Type 304, the basic "18-8" alloy (18% chromium, 8% nickel), is most often specified for roofing, flashing and other architectural applications. Over the years, it has become known as the "all-purpose" stainless steel.

Type 316 contains 2 to 3 percent molybdenum, and is more corrosion resistant than 304 stainless steels. Although higher in initial cost, 316 usually is preferred for long-term service in aggressive industrial, chemical and seacoast atmospheres.

There are many other alloys. However, these are the most common.

For further information, contact the Specialty Steel Industry of North America (SSINA), 3050 K Street, N.W., Washington, D.C. 20007, 800-982-0355, http://www.ssina.com.

ADVANTAGES OF STAINLESS STEEL

Stainless steel has certain inherent advantages that make it ideal for a wide variety of architectural applications. Chief among these is its resistance to corrosion. Under normal conditions, stainless is unlikely to corrode, pit, tarnish, or deteriorate in any way. There is no need to compensate for loss of strength due to deterioration, and replacement costs are virtually non-existent.

From the esthetic viewpoint, stainless is notable for its inherent beauty and the ease with which it blends with other materials. It has a subtle sheen which does not overwhelm or intrude on other design and color elements; rather, it complements, reflects and highlights surrounding materials. Because of its corrosion resistance, its appearance is permanent, and there is no danger of corrosion streaking or staining other materials.

Stainless is among the strongest of metals. Tensile strengths of 75,000 to 125,000 psi (or higher if needed) often allow the use of gauges much lighter than are usually needed in other metals. Sturdy design elements, fabricated from thin sheets of stainless, can combine light weight with strength.

COLORED STAINLESS STEEL

Several techniques exist to produce surprising colors that complement the natural luster of stainless steel, but in no way affect its inherent corrosion resistance and low maintenance benefits. Colored stainless steel is a creative option often overlooked by architects and designers, particularly here in the U.S. In other parts of the world, it is used much more extensively.

In Japan, for example, colored stainless steel roofs and bathtubs are common. In the U.S., colored stainless steel can be found primarily in kitchens where refrigerators, dishwashers and other large appliances are now available in several stunning colors.

A corollary of stainless' high life expectancy is the ease with which it can be maintained. In an urban or industrial atmosphere all that is generally needed is a washing with detergent and water or with one of the commercial stainless steel cleaners. In many circumstances, however, washing can be left to the action of rain and wind, with no fear that the metal will deteriorate. Savings that accrue from the low cost of maintaining stainless can make up any difference in cost that may appear between components made of stainless and other materials. Result: in the long run, stainless is one of the most economical of architectural metals.

The Specialty Steel Industry of North America has a life cycle costing computer diskette program available free of charge that will compare stainless with other materials.

Stainless steel is produced in virtually all standard metal forms and sizes, plus many special shapes. Sheet and strip stainless are the products most often formed into architectural components. The designation strip is used for widths of metal less than 24 inches, while sheet refers to 24 inch and greater widths. Sheet and strip forms are available in practical architectural thicknesses from .010 inch and up (or as low as .001 inch for special applications). Heavier plate material is also available, over 10 inches in width and 3/16 inch and over in thickness.

Stainless steels are also produced in the form of tubing — round, oval, square, rectangular and hexagonal, both welded and seamless. Welded tubing is made up to 30 inches in diameter, seamless up to 8 inches. Other available forms include bars and rods of similar shapes as well as wire and extrusions.

For further information on stainless steels, contact The Specialty Steel Industry of North America (SSINA), 3050 K Street, N.W., Washington, D.C. 20007, 800-982-0355, http://www.ssina.com

RESIDENTIAL APPLICATIONS

Stainless steel is now being used in a wide variety of products for residential applications. Following is a partial listing of these applications:

CONSTRUCTION

Roofing and Flashing
Entry Doors
Windows
Railings
Fireplace Vents (Liners)
Range Vents
Mail Boxes
Water Lines
Sinks and Counters
Bathroom Fixtures
Gas Connections
Kick Plates
Ceiling Tiles
Heater & Washing Machine Hoses

HOME FURNISHING

Appliances
Furniture
Decorator Panels
Cutlery
Cookware
Towel Racks
Trash Containers
Coffee Mugs/Thermos
Bar Accessories

ACCESSORIES

Barbecue Grills
Playground Slides
Swimming Pool Accessories
Garden Tools

This Handbook is designed to showcase several applications of stainless steel in and around the house.

ROOFS & DOWNSPOUTS

TYPICAL APPLICATIONS

Roofing

Shingles

Gutters

Flashings

Downspouts

Snow Retention

DOORS & WINDOWS

TYPICAL APPLICATIONS

Doors

Windows

Door Frames

Window Frames

Pulls

FURNITURE

TYPICAL APPLICATIONS

Dining Tables

End Tables

Coffee Tables

Headboards

Chairs

Stools

TELEPHONE/ INTERCOM SYSTEM

FIREPLACES

TYPICAL APPLICATIONS

Front Panels & Surrounds

Liners

Flues

TYPICAL APPLICATIONS

Stairs

Balconies

Entry Ways

Railings

Gates

Fittings

TYPICAL APPLICATIONS

Sinks & Counters

Towel Racks

Stools

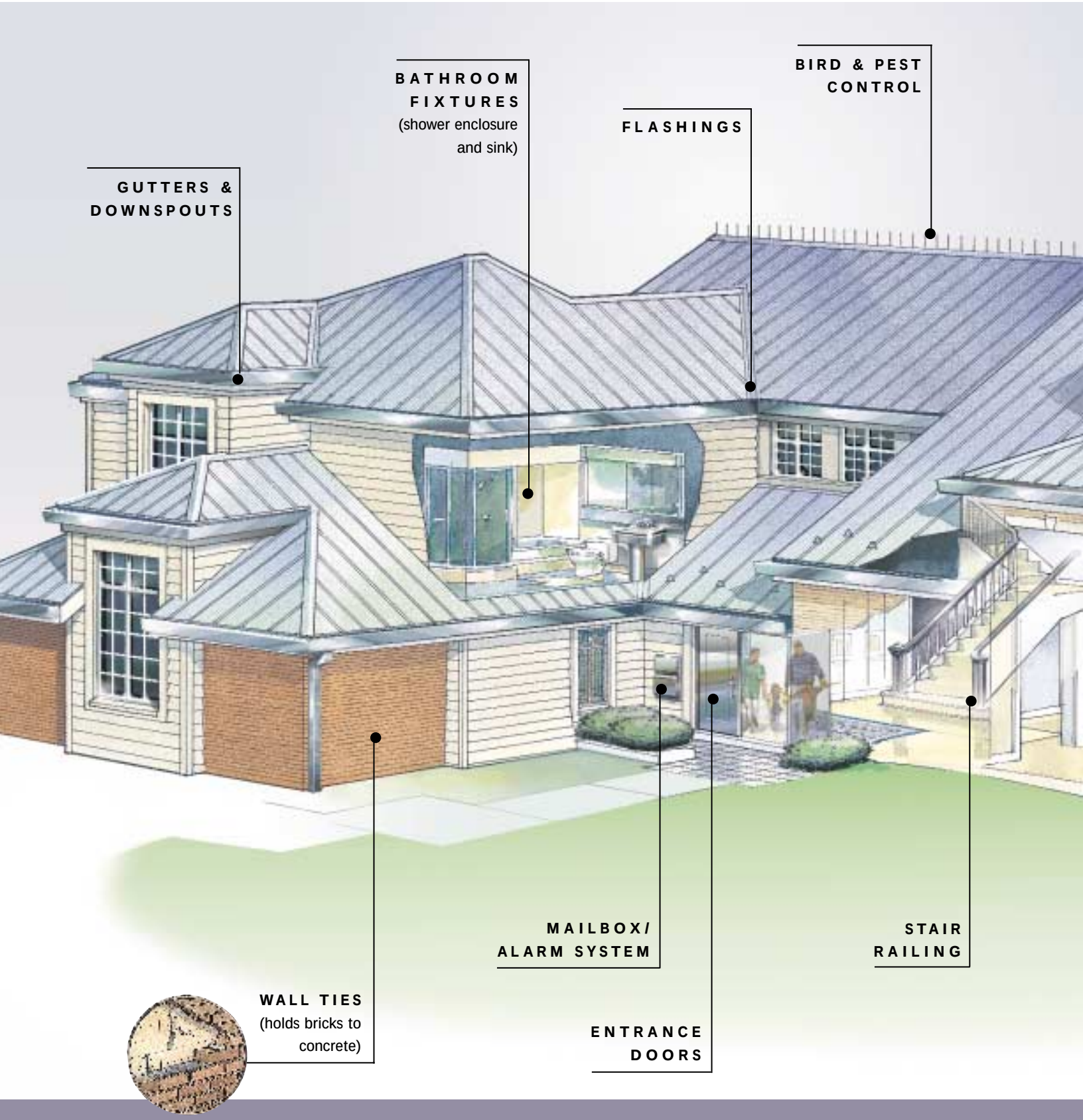
Cabinets

Wastecans

Brush & Paper Caddies

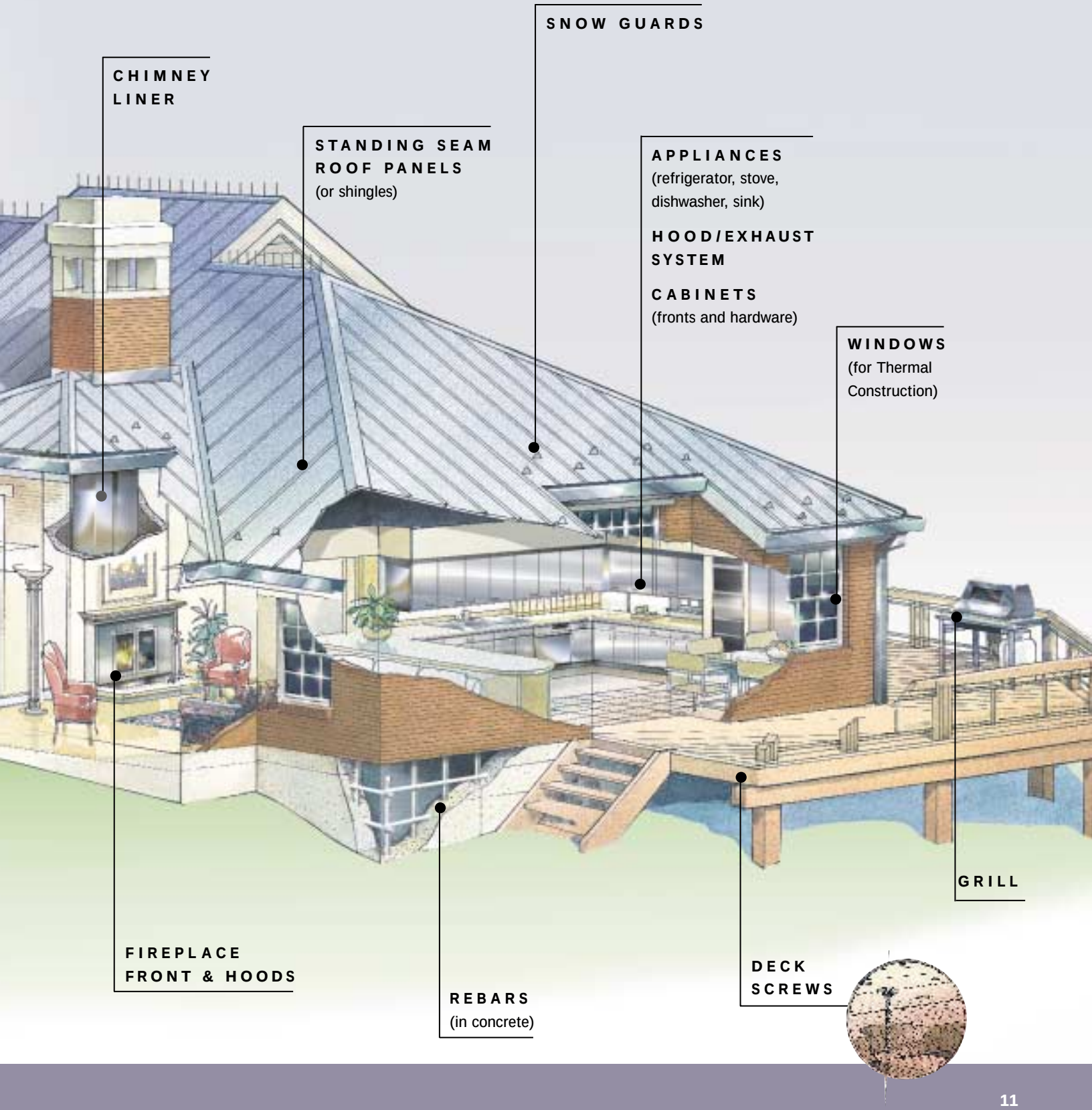
Mirrors

Some of the many uses of stainless steel for better living...



STAINLESS STEEL EVERYWHERE...

for long lasting value and beauty



KITCHENS

TYPICAL APPLICATIONS

Sinks

Vents & Hoods

Counter Tops

Cabinets

Drawer & Cabinet Pulls

For a Directory of Representative Suppliers, refer to inside back cover.

KITCHEN APPLIANCES

TYPICAL APPLICATIONS

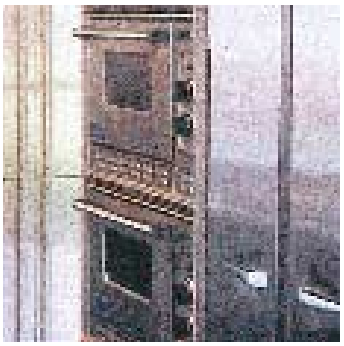
Stove Fronts

Refrigerator Fronts

Ovens

Dishwashers

Microwaves



TYPICAL APPLICATIONS

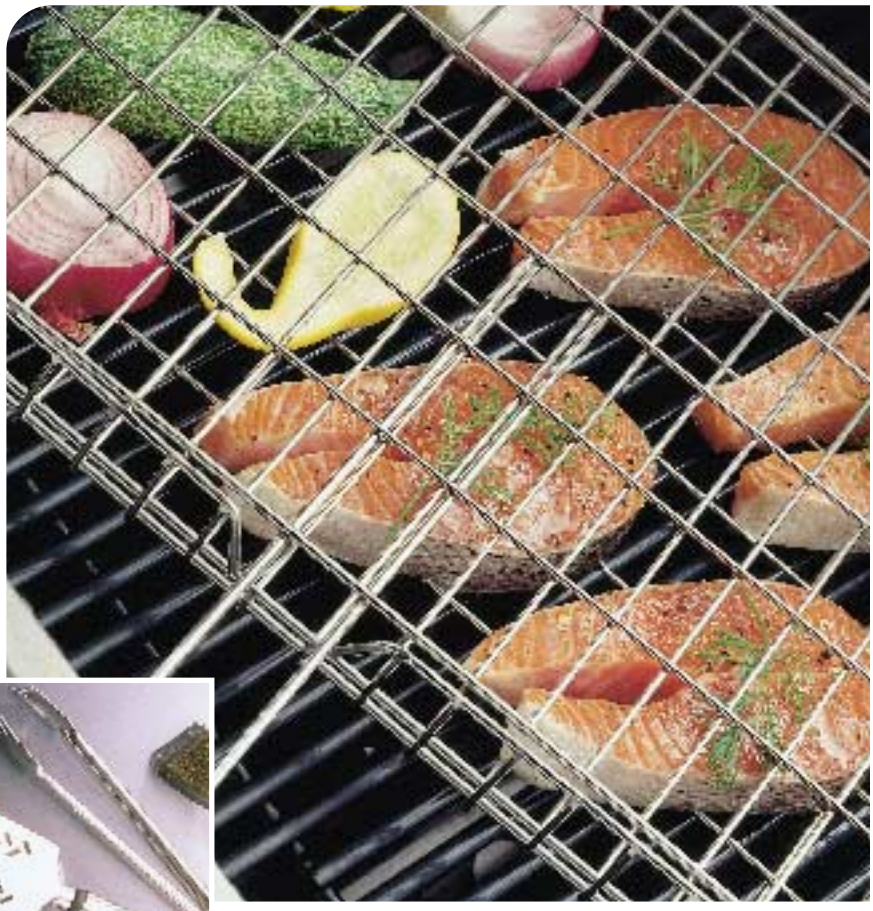
Barbecue Tools

Hot Trays

Grill Baskets

Towel Dispensers

In-Sink Colanders



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TYPICAL APPLICATIONS

Pots & Pans

Coffee Makers

Kettles

Open Kitchen Storage

Dish Racks

Sink Caddy

Wine Racks

Waste & Trash Containers

Towel Rack

Utensil Holder

Flatware

Clocks

Baskets & Bowls

DISHWASHERS

HOSES

TYPICAL APPLICATIONS

Water Heater

Washing Machine

TYPICAL APPLICATIONS

Railings

Heaters

Hose Hangers

Fixtures

For a Directory of Representative Suppliers, refer to inside back cover.

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TYPICAL APPLICATIONS

Barbecue

Meat Smoker

Charcoal Starter

Rotisseries

Grill Centers