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The representations and warranties of B and B Sheet Metal made in this specification is true and correct as of September 4, 2007. For more up-to date information, or to ensure the correctness of the following information at any given time, please consult with a B and B Sheet Metal employee. Furthermore, all the information contained and specified below is true for stock products and thus any modifications or customizations to any product will change the nature and specifications particular to that product likely making some or all of the information herein inapplicable.

SECTION 08 91 10

DECORATIVE SHEET METAL LOUVERS AND DORMERS

******* B and B Sheet Metal designs and fabricates an extensive line of sheet metal products for the construction industry in modern facilities employing state of the art techniques such as computerized press brakes and waterjet cutting. B and B Sheet Metal's products include flashings, fascia, copings, trim, gutters, leader and conductor heads, scuppers, downspouts, snow guards, finials, spires, cupolas, cornices, roof vents, skylights, louvers, and dormers using a variety of materials such as copper, patina coated copper, lead-coated copper, zinc-coated copper, galvanized steel, stainless steel, terne-coated stainless steel, and aluminum.**

This guide specification section can be used to specify decorative sheet metal wall louvers and dormers manufactured by B and B Sheet Metal for a competitively bid project.

B and B Sheet Metal provides both standard and custom designed louvers and dormers and can recreate original sheet metal fabrications for historic preservation and renovation projects. The specifier will need to edit, modify, and expand this section for a specific project. Appropriate options and requirements need to be selected and non-applicable ones deleted. Contact B and B Sheet Metal for assistance in planning, designing, selecting options, and detailing custom installations.

The specification section is organized by placing information in three standard parts:

<u>PART 1 - GENERAL</u>	Describes administrative and procedural requirements.
<u>PART 2 - PRODUCTS</u>	Describes materials, products, and accessories to be incorporated into the construction project.
<u>PART 3 - EXECUTION</u>	Describes how the products will be installed at the construction site.

Throughout this product guide specification, references are made to other specification sections that might be contained in the project manual. These references are presented as examples and coordination reminders. For each project, these references will need to be revised to reflect actual sections being used.

The specifier will need to edit this product specification for a specific project to reflect the options and applications being used. The guide section has been written so that most editing can be accomplished by deleting unnecessary requirements and options. Options are indicated by []. Notes to assist the specifier in selecting options and editing the specification guide are printed in bold and indicated with ***. For final editing, all brackets and notes will need to be deleted from the guide.**

PART 1 - GENERAL

1.1 SUMMARY

******* B and B Sheet Metal provides standard designed decorative sheet metal wall louvers and dormers as well as custom fabrications to accommodate unique project requirements. Edit the following paragraph to reflect specific project requirements. *******

- A. Section includes: [Custom fabricated] [Manufactured] decorative sheet metal [wall louvers] [and] [dormers] for [sloped roof system] [exterior wall system] [_____] [historic restoration of [_____] [_____].
- B. Related sections:

******* List other specification sections dealing with work directly related to this section such as the following. *******

1. Section [04 20 00 - Unit Masonry] [09 24 00 - Portland Cement Plastering] [_____]: Exterior wall system to receive wall louvers.
2. Section [07 30 33 - Steep Slope Roofing] [07 41 00 - Metal Roof Panels] [_____]: Roof system to receive dormers.
3. Section 07 62 00 - Sheet Metal Flashings and Trim: Sheet metal flashings, counter flashings, and trim installed [as part of roof system for flashing roof mounted dormers.] [to seal around perimeter of wall louvers.]
4. Section 07 92 00 - Joint Sealants: Sealants and backing material used for installation of sheet metal.

1.2 REFERENCES

******* List by number and full title reference standards referred to in remainder of specification section. Delete non-applicable references. *******

- A. American National Standards Institute (ANSI): ANSI Z97.1 - Safety Performance Specifications and Methods of Test for Safety Glazing Material Used in Buildings.
- B. American Society for Testing and Materials (ASTM):
 - 1. ASTM A167 - Stainless and Heat-Resisting Chromium-Nickel Steel Plate, Sheet, and Strip.
 - 2. Section A308 - Steel Sheet, Terne (Lead-Tin Alloy) Coated by Hot-Dip Process.
 - 3. ASTM A653 - Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by Hot-Dip Process.
 - 4. ASTM B32 - Solder Metal.
 - 5. ASTM B101 - Lead-Coated Copper Sheet and Strip for Building Construction
 - 6. ASTM B209 - Aluminum and Aluminum-Alloy Sheet and Plate.
 - 7. ASTM B370 - Copper Sheet and Strip for Building Construction.
 - 8. ASTM C1036 - Flat Glass.
 - 9. ASTM C1048 - Heat Treated Float Glass, Kind HS, Kind FT Coated and Uncoated.
 - 10. ASTM C1172 - Laminated Architectural Flat Glass.
 - 11. ASTM E546 - Frost Point of Sealed Insulating Glass Units.
 - 12. ASTM E576 - Frost Point of Sealed Insulating Glass Units in Vertical Position.
 - 13. ASTM E773 - Accelerated Weathering for Sealed Insulating Glass Units.
 - 14. ASTM E774 - Classification of the Durability of Sealed Insulating Glass Units.
- C. CPSC 16 CFR 1201 - Consumer Product Safety Commission Safety Standard for Architectural Glazing Materials.
- D. International Code Council (ICC): ICC IBC - International Building Code.
- E. National Roofing Contractors Association (NRCA): NRCA Roofing Manual.

- F. Sheet Metal and Air Conditioning Contractors National Association (SMACNA) - SMACNA Architectural Sheet Metal Manual.

1.3 SUBMITTALS

- A. Submit in accordance with Section 01 33 00 - Submittal Procedures:
1. Product data.
 2. Shop drawings for decorative sheet metal [wall louvers] [and] [dormers] showing elevations, plans, dimensions, material gauges, fastening methods, and installation details for actual Project conditions. Where appropriate, provide perspective sketches or photographs to illustrate design.
 3. Sample of selected material and finish.
 4. Manufacturer's installation and maintenance instructions.

1.4 QUALITY ASSURANCE

- A. Manufacturer: Company specializing in manufacturer of sheet metal wall louvers and dormers with 5 years minimum successful, documented experience.
- B. Perform work in accordance with applicable details and requirements published in NRCA Roofing Manual and SMACNA Architectural Sheet Metal Manual.

***** **Include the following paragraph if dormers are to be equipped with glass panels.**

- C. Comply with safety requirements of following standards. Where discrepancies exist, more stringent requirement shall govern.
1. Consumer Product Safety Commission 16 CFR 1201.
 2. ICC IBC.

1.5 HANDLING

- A. Deliver, store, and handle sheet metal fabrications to prevent denting, scratching, breaking, gouging, abrasion, soiling, discoloration, staining, or other damage.

PART 2 - PRODUCTS**2.1 ACCEPTABLE MANUFACTURERS**

- A. B and B Sheet Metal, 25-40 50th Avenue, Long Island City, New York 11101; 715-433-2501; www.bbsheetmetal.com.
- B. Requests to use equivalent products of other manufacturers shall be submitted in accordance with Section 01 25 13 - Product Substitution Procedures.

2.2 MATERIALS

******* B and B Sheet Metal provides wall louvers and dormers in 10 materials and finishes as illustrated in their product data. These fabrications are typically fabricated from materials that can be soldered such as galvanized steel, copper, lead or zinc coated copper, stainless steel, and terne-coated stainless steel. Louvers and dormers can also be made in weldable materials like aluminum. Not all louver styles are available in all materials. Contact B and B Sheet Metal for assistance in selecting material and gauge for specific items. Select required material and finish from the following options. Delete unnecessary materials.**

Sheet steel can be coated with a thin layer of zinc to protect it from rusting by dipping it into molten zinc to produce galvanized sheet steel. B and B Sheet Metal provides exposed galvanized steel fabrications which may be field painted. It is available in 26 and 24 gauge thicknesses. Galvanized steel is also available with a fluoropolymer Kynar colored paint coating in 24 and 22 gauge thicknesses. *****

- A. Galvanized sheet steel: Zinc-coated steel sheet complying with ASTM A653, [26] [24] gauge thick.
- B. Kynar finished galvanized sheet steel: Zinc-coated steel sheet complying with ASTM A653 in [24] [22] gauge thickness and pre-finished with fluoropolymer Kynar coating in color selected by Architect from manufacturer's full range.]

******* Four types of copper sheet are provided for wall louvers and dormers:**

Plain copper sheet in weights of 16 and 20 ounces per square foot.

Pre-patinaed copper sheet (Evergreen): Copper sheet with a greenish-brown film caused by oxidation in weights of 16 and 20 ounces per square foot.

Lead-coated copper sheet: Copper sheet with a thin coating of lead in weights of 16 and 20 ounces per square foot.

Zinc-coated copper sheet (Freedom Gray): Copper sheet with a thin coating of zinc in weights of 16 and 20 ounces per square foot.

Copper and lead or zinc coated copper are highly ductile and easy to form and solder. When exposed over time, copper forms a greenish-brown crust produced by oxidation.

- C. Copper sheet: Plain copper sheet complying with ASTM B370 and weighing [16] [20] ounces per square foot.
- D. Pre-patinaed copper sheet: Copper sheet weighing [16] [20] ounces per square foot and complying with ASTM B370 with greenish-brown patina oxidation film; Evergreen Copper as provided by B and B Sheet Metal.
- E. Lead-coated copper: Copper sheet with a thin lead coating complying with ASTM B101 and weighing [16] [20] ounces per square foot.
- F. Zinc-coated copper: Copper sheet with a thin zinc coating complying with ASTM [_____] and weighing [16] [20] ounces per square foot; Freedom Gray Copper as provided by B and B Sheet Metal.

***** **Stainless steel is an alloy of carbon steel typically containing chromium and nickel to enhance its resistance to corrosion. Sheet metal louvers and dormers can be fabricated from either plain 26 or 24 gauge stainless steel or from 26 gauge terne-coated stainless steel. Terne coating is a corrosion-protective coating consisting of a combination of lead and tin. Terne-coated stainless steel is glossy upon first exposure, but turns matte gray with exposure.** *****

- G. Stainless steel: [26] [24] gauge corrosion resistant chromium, tin, and steel alloy complying with ASTM A167.
- H. Terne-coated stainless steel: 26 gauge stainless steel sheet with a hot dipped lead and tin terne coating complying with ASTM A167 and ASTM A308.

***** **Sheet aluminum louvers and dormers are provided in 0.032, 0.040, 0.050, and 0.063 inch thicknesses with either a mill finish or a fluoropolymer Kynar coating in several colors.** *****

- I. Aluminum sheet: [0.032] [0.040] [0.050] [0.063] inch thick aluminum sheet complying with ASTM B209 and [mill finished.] [finished with fluoropolymer Kynar coating in color selected by Architect from manufacturer's full range.]

***** **For dormers with glazed openings, B and B Sheet Metal provides eight glazing options. Include and edit the following paragraph if glazed cupolas are being specified.**

- J. Glazing:

[1/4 inch thick, monolithic, clear, laminated safety glass complying with ASTM C1172, ANSI Z97.1, and CPSC 16 CFR.]

[1/4 inch thick, monolithic, translucent, laminated safety glass fabricated by bonding two glass lites with white translucent interlayment and complying with ASTM C1172, ANSI Z97.1, and CPSC 16 CFR.]

[1/4 inch thick, monolithic, clear wire glass with square mesh of woven stainless steel wire conforming to ASTM C1036, Type II.]

[1/4 inch thick, monolithic, clear hammered wire glass with square mesh of woven stainless steel hammered wire conforming to ASTM C1036, Type II.]

[1/4 inch thick, monolithic, clear, ribbed glass.]

[1 inch thick, bronze tinted, insulating, fully tempered safety glass complying with ASTM E546, ASTM E576, ASTM E773, and ASTM E774.

1. Outer lite: 1/4 inch thick, bronze tinted, fully tempered safety glass heat treated in accordance with ASTM C1048, Kind FT to meet requirements of ANSI Z97.1 and CPSC 16 CFR to qualify as safety glass.
2. Inner lite: 1/4 inch thick, clear, fully tempered safety glass heat treated in accordance with ASTM C1048, Kind FT to meet requirements of ANSI Z97.1 and CPSC 16 CFR to qualify as safety glass.]

[1 inch thick, white translucent, insulating, laminated safety glass complying with ASTM E546, ASTM E576, ASTM E773, and ASTM E774.

1. Outer lite: 1/4 inch thick, translucent, laminated safety glass fabricated by bonding two glass lites with white translucent interlayment and complying with ASTM C1172, ANSI Z97.1, and CPSC 16 CFR.
2. Inner lite: 1/4 inch thick, clear, fully tempered safety glass heat treated in accordance with ASTM C1048, Kind FT to meet requirements of ANSI Z97.1 and CPSC 16 CFR to qualify as safety glass.]

[1 inch thick, low emissivity (low-E), insulating glass complying with ASTM E546, ASTM E576, ASTM E773, and ASTM E774.

1. Outer lite: 1/4 inch thick, fully tempered, low-E glass with neutral coating pyrolytically applied to produce durable surface and resulting in improved thermal performance and reduced solar heat gain complying with ASTM C1048, Kind FT to meet requirements of ANSI Z97.1 and CPSC 16 CFR to qualify as safety glass.
2. Inner lite: 1/4 inch thick, clear, fully tempered safety glass heat treated in accordance with ASTM C1048, Kind FT to meet requirements of ANSI Z97.1 and CPSC 16 CFR to qualify as safety glass.]

- K. Sealant: [Silicone] [Polyurethane] [Acrylic] [_____] type specified in Section 07 92 00 - Joint Sealants.
- L. Solder: ASTM B32.

2.3 WALL LOUVERS

******* B and B Sheet Metal manufacturers 5 styles of wall louvers as illustrated in B and B Sheet Metal product literature. B and B Sheet Metal also custom fabricates wall louvers to shapes and sizes based on the Design Professional's design or to replicate existing historic louvers. Contact B and B Sheet metal for assistance in creating a custom fabricated, unique wall louver. *******

- A. Type: [Manufactured sheet metal fixed blade wall louver; [Half Round] [Octagon] [Round Top] [Rectangle] [Triangle] Wall Louver as manufactured by B and B Sheet Metal.] [Sheet metal fixed blade wall louver custom designed in accordance with design, shape, and dimensions illustrated on Drawings and reviewed shop drawings and custom fabricated by B and B Sheet Metal.]

******* Include the following paragraph if wall louvers are for a historic preservation project and need to replicate existing louvers. *******

- B. Louvers are to replicate existing historic louvers and design, materials, dimensions, fabrication methods, and installation details as shown on reviewed shop drawings shall match existing to the extent possible.

******* Indicate selected material and either thickness or weight for sheet metal used to fabricate louvers. *******

- C. Material: [Galvanized steel sheet] [Kynar finished galvanized steel sheet] [Copper sheet] [Evergreen pre-patinaed copper sheet] [Lead-coated copper sheet] [Freedom Gray zinc-coated copper sheet] [Stainless steel] [Terne-coated stainless steel] [Mill finished aluminum] [Kynar finished aluminum] [weighing [16] [20] ounces per square foot.] [in [22] [24] [26] gauge thickness,] [in [0.032] [0.040] [0.050] [0.063] inch thickness.
- D. Overall size: [[_____] inches wide by [_____] inches high.] [As dimensioned on Drawings.]
- E. Nominal frame depth: [[_____] inches.] [As dimensioned on Drawings.]

******* Wall louvers are typically provided with fixed Z-shaped louver blades. *******

- F. Louver blades: [Horizontal] [Vertical], fixed, [Z-shaped] [V-shaped] [L-shaped] [Y-shaped] blades spaced at [[_____]inches.] [as dimensioned on Drawings.] [manufacturer's standard spacing as indicated on reviewed shop drawings.] Louver shall provide [50] [_____] percent free air flow.

******* Wall louvers are provided with and without a perimeter flange to cover joint between louver and wall rough opening. *******

- G. Perimeter frame: Fabricated from formed sheet metal members with mitered and [soldered] [welded] joints. Provide louver [with [_____] inches wide flange around perimeter.] [without a perimeter flange.]

******* All louvers are provided with insect screens made from either copper, brass, or fiberglass mesh. *******

- H. Insect screen: Equip louvers with [copper] [brass] [fiberglass] mesh insect screen in frame to match louver shape and attached to interior side of louver.
- I. Provide wall louvers with fasteners, anchors, and other hardware of type, size, and spacing as recommended by manufacturer for secure, rigid installation of louver in rough wall opening.

2.4 DORMERS

******* Dormers are small structures projecting from a sloping roof and housing either a vertical glass window or a ventilating louver. B and B Sheet Metal manufacturers over 11 styles of dormer each provided with either fixed glass or a louver panel. Refer to B and B Sheet Metal product literature for illustrations of these standard designs. B and B Sheet Metal also custom fabricates dormers based on the Design Professional's design or to replicate existing historic dormers. Contact B and B Sheet metal for assistance in creating a custom fabricated, unique dormer. *******

- A. Type: [Manufactured sheet metal, projecting structure designed for mounting on sloping roof with [fixed glass window] [fixed blade louver ventilation panel]; [Arch Top] [Birdhouse] [Dog House] [Dolphin] [Eyebrow] [F.I.S.H.] [Half Round] [Pyramid] [Round Top] [Triangular] [Triangular Top] as manufactured by B and B Sheet Metal.] [Sheet metal, projecting structure designed for mounting on sloping roof with [fixed glass window] [fixed blade louver ventilation panel] custom designed in accordance with design, shape, and dimensions illustrated on Drawings and reviewed shop drawings and custom fabricated by B and B Sheet Metal.]

******* Include the following paragraph if dormers are for a historic preservation project and need to replicate existing dormers. *******

- B. Dormers are to replicate existing historic dormers and design, materials, dimensions, fabrication methods, and installation details as shown on reviewed shop drawings shall match existing to the extent possible.

******* Indicate selected material and either thickness or weight for sheet metal used to fabricate dormers. *******

- C. Material: [Galvanized steel sheet] [Kynar finished galvanized steel sheet] [Copper sheet] [Evergreen pre-patinaed copper sheet] [Lead-coated copper sheet] [Freedom Gray zinc-coated copper sheet] [Stainless steel] [Terne-coated stainless steel] [Mill finished aluminum] [Kynar finished aluminum] [weighing [16] [20] ounces per square foot.] [in [22] [24] [26] gauge thickness,] [in [0.032] [0.040] [0.050] [0.063] inch thickness.

******* Dormers can be fabricated with fixed glass window to allow natural light into the building or with a louver panel to provide ventilation. Edit the following to reflect Project requirements. *******

- D. Fabrication: Fabricate dormers from formed sheet metal with [soldered] [welded] joints [and [fixed glass windows] [ventilating louver panels] as detailed on Drawings].

******* Include the following paragraph if dormers have glass windows. *******

- E. Window glazing: Provide glass panels of shape and size illustrated on Drawings and reviewed shop drawings with [1/4] [1] inch thick [monolithic, clear, laminated safety glass] [monolithic, translucent white, laminated safety glass] [monolithic, clear wire glass] [monolithic, clear, hammered wire glass] [monolithic, clear, ribbed glass] [bronze tinted, insulating, fully tempered safety glass] [white translucent, insulating, laminated safety glass] [low-E), insulating glass] installed with removable metal stops and sealant.]

******* Include the following paragraph if dormers have louvers. Louvers are typically fabricated with fixed Z-shaped blades and insect screens. Copper, brass, and fiberglass screens are available options. *******

- [F. Louvered panels: Provide louvered panels of shape and size illustrated on Drawings and reviewed shop drawings with fixed [Z-shaped] [_____] blades and [copper] [brass] [fiberglass] insect screens. Louver shall provide [50] [_____] percent free air flow.

2.5 [WALL LOUVER] [AND] [DORMER] FABRICATION

- A. Fabricate sections to profiles and dimensions indicated on Drawings and reviewed shop drawings.
- B. Intersections: Cope to fit accurately and solder.
- C. Edges: Turn back all exposed edges to form 1/2 inch hem.
- D. Permanently secure louver blades to perimeter frame to prevent vibration or noise due to passage of air. Slope blades at [45] [_____] degrees.
- E. Shop install screens in [wall louvers] [and] [dormers].
- F. Soldering: Clean and tin materials. Completely fill seams with solder. Soldering on exposed finished surfaces shall be neat, full flowing, and smooth. After soldering, remove flux and wipe and wash joints clean.

PART 3 - EXECUTION**3.1 PREPARATION**

******* Edit the following paragraph to reflect required coordination between provision of louvers and dormers and construction of other building elements. *******

- A. Coordinate provision of sheet metal [wall louvers] and] [dormers] with type and construction or installation of [exterior walls,] [roof deck and membrane,] [wood blocking and nailers,] [exterior wall finishes,] [_____] and other work related to sheet metal.
- B. Prior to submittal of shop drawings and fabrication, field verify required sizes and installation tolerances for sheet metal [wall louvers] [and] [dormers].
- C. Deliver sheet metal [wall louvers] [and] [dormers] to site in time for accurate placement and coordination with other work.
- D. Verify roof membrane terminations and base flashings are in place, sealed, and secure.
- E. Coat dissimilar materials in contact with sheet metal:
 - 1. Concrete and masonry: One coat bituminous paint.
 - 2. Wood: 2 coats aluminum paint.

3.2 INSTALLATION

- A. Install sheet metal [louvers] [and] [dormers] in accordance with Drawings, reviewed shop drawings, manufacturer's instructions and NRCA Roofing Manual and SMACNA Architectural Sheet Metal Manual standards of workmanship.
- B. Do not allow sheet metal to come in contact with dissimilar materials.
- C. Do not install bent, twisted, scratched, or otherwise damaged sheet metal fabrications. Remove from site and replace.
- D. Erect [louvers] [and] [dormers] plumb and level without warp, twist, or distortion.
- [E. Louvers: Secure louvers in rough wall opening framing with concealed fasteners and other hardware.
 - 1. Install sheet metal flashings and trim as detailed on Drawings and reviewed shop drawings to divert moisture to exterior.
 - 2. Install perimeter sealant and backing rod in perimeter joint around louver in accordance with Section 07 92 00 - Joint Sealants.]
- [F. Dormers: Coordinate with construction of roof decking opening and installation of roofing system, wood curbs, blocking, and flashings.
 - 1. Install on wood curbs as detailed on Drawings and reviewed shop drawings.
 - 2. Anchor dormers securely to roof structure to withstand lateral forces and inward and outward pressures.
- G. Protect finishes of exposed to view sheet metal fabrications. Avoid gouging, scratching, and denting. Use cotton gloves when handling and installing unprotected sheet metal in order to avoid soiling exposed to view surfaces.

3.3 CLEANING

- A. Remove excess sealant by moderate use of mineral spirits or other solvent acceptable to sealant manufacturer.
- B. Exercise care in removing mortar, cementitious materials, and sand from sheet metal surfaces. Do not wipe surfaces in order to avoid scratching.
- C. Wash exposed surfaces with solution of mild detergent applied with soft cloth. Wipe surfaces clean.

END OF SECTION