

**Section 102400**

**Grilles and Screens**

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This section is based on the products of Cascade Iron Works, Inc., which is located at:

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Email: service@cascadeironworks.com

Web: www.cascadeironworks.com

 Cascade Iron Works designs, manufactures and distributes rooftop equipment screen solutions.

 This specification includes the equipment screen frames, necessary installation hardware, and screen facing.

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**Simple-Frame Guide Specifications**

This Guide Specification is to be used to develop an office master specification or specifications for a project. In either case, this Guide Specification must be edited to fit the conditions of use. particular attention should be given to the deletion of inapplicable provisions. Include necessary items related to a particular project. Include appropriate requirements where blank spaces have been provided.

**PART 1 – GENERAL**

* 1. SECTION INCLUDES
1. Rooftop equipment screens and steel brace framing. Framing to be anchored to roof deck and framing.
	1. RELATED SECTIONS

\*\* NOTE TO SPECIFIER \*\* Delete any sections below not relevant to this project; add others as required.

* + 1. Section 033000 - Cast-In-Place Concrete: Execution requirements for embedded anchors and attachments for metal fabrications specified by this section in concrete.
		2. Section 042000 - Masonry Anchorage and Reinforcement: Installation of anchors.
		3. Section 051200 - Structural Steel: Metal Framing.
		4. Section 053113 - Steel Floor Deck.
		5. Section 055000 - Metal Fabrications: Frames and supports.
		6. Section 077213 - Roof Curbs.
		7. Section 099100 - Paints and Coatings: Field applied paint finish.
		8. Division 23 - Roof Top HVAC Equipment.
	1. REFERANCES\*\* NOTE TO SPECIFIER \*\* Delete references from the list below that are not actually required by the text of the edited section.
		1. ASTM A 500 - Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes.
		2. ASTM A 653/A 653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
		3. ASTM A 666 - Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar.
		4. ASTM A 1008 - Standard Specification for Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, Solution Hardened, and Bake Hardenable.
		5. ASTM D 4811 - Standard Specification for Nonvulcanized (Uncured) Rubber Sheet Used as Roof Flashing.
		6. ASTM D 6878 - Standard Specification for Thermoplastic Polyolefin Based Sheet Roofing.
		7. ASCE 7 - Minimum Design Loads for Buildings and Other Structures.
		8. AWS A2.4 - Standard Symbols for Welding, Brazing, and Nondestructive Examination.
		9. AWS D1.1 - Structural Welding Code - Steel.
	2. COORDINATION
1. Coordinate with other contractors onsite to avoid damaging any membranes or associated roof accessories.
	1. ACTION SUBMITTALS
2. Submit under provisions of section 013300
3. Product Data: Manufacturer’s data sheets on each product to be used, including:
4. Preparation instructions and recommendations.
5. Storage and handling requirements and recommendations.
6. Installation methods.
7. Shop Drawings: Shows the layout of the screen indicating typical dimensions of components and specific placement of frames. Welds shall be shown using standard AWS A2.4 Welding Symbols. Include weld lengths. If applicable, include elevations.

\*\* NOTE TO SPECIFIER \*\* Delete selection samples if colors have already been selected.

1. Samples for Initial Selection: For products involving selection of color, texture, or design
2. Verification Samples: For each finish product specified, two samples, minimum size 6 inches (150 mm) square, representing actual product, shape, and patterns.
	1. INFORMATIONAL SUBMITTALS

\*\* NOTE TO SPECIFIER \*\*Insert the state name where the project is located. If project is located in a state that requires a structural engineer, change “professional” to “structural.”

1. Design Calculations: 3 copies of structural calculations withstanding wind loads and weight, stamped with a seal and signed from a professional engineer licensed in [insert state name].
2. Manufacturer’s Certificates: Certify products meet or exceed specified requirements.
3. Welders Certificates: Certify welders employed on the Work, verifying AWS qualification within previous 12 months
4. Warranties: Submit all applicable warranty specimen
	1. QUALITY ASSURANCE
5. Manufacturers Qualifications: Minimum 5 year experience manufacturing similar products

\*\* NOTE TO SPECIFIER \*\* If project is located in a state that requires a structural engineer, change “professional” to “structural.”

1. Design Qualifications: Provide structural design calculations stamped by a professional engineer experienced in design of this Work, who is licensed in the state in which this project is located.
2. Welders: AWS certified within previous 12 months
	1. DELIVERY, STORAGE, AND HANDLING
3. Deliver Materials to the project site clearly marked for proper identification.
4. Receive, handle and store materials in conformance with the manufacturers printed instructions.
5. Store Products under cover, in manufacturer’s unopened packaging until ready for installation.
6. Protect materials from exposure to moisture.
7. Store materials in a dry, warm, ventilated weathertight location.
8. Protect metal fabrications from damage by exposure to weather.
9. Protect finishes from damage
10. Handling: Do not lift loads by packaging bands or straps. Use safety guidelines and good practices while transporting or handling material.
11. When loading to roof, disperse the weight so as not to overload the building framing.
	1. PROJECT CONDITIONS
12. Field Measurement: Prior to fabrication, verify all conditions pertaining to the installation on site. Take measurements to verify dimensions of equipment screen and specify on Shop Drawings.
13. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.
	1. WARRANTY
14. Screen Frames: Provide the manufacturer’s standard limited written warranty which guarantees protection from structural failure due to tearing, buckling, bending, corrosion or cracking when used in normal environmental conditions for the applicable period of the warranty.
15. Louvers: Refer to Section 10220, Louvered Equipment Enclosure

**PART 2 – PRODUCTS**

2.1 PERFORMANCE REQUIREMENTS

1. Design Loads: Comply with Current Building Code for site location and building height.
2. Design to resist ASCE 7 – Minimum Design Loads for Buildings and Other Structures
3. Design all materials, assembly and attachments to resist snow, wind, suction and uplift loading at any point without damage or permanent set.
4. Structural Design: Structural design calculations shall be prepared for the equipment screen frames and attachment building.
5. All Welds to be performed by an AWS certified welder. Valid Certification to be provided.

2.2 MANUFACTURERS

1. Acceptable Manufacturer:

Cascade Rooftop Screens, Inc. at 688 Walsh Avenue, Santa Clara, CA 95050; Tel: (408) 827 – 1700 Email: general@cascaderooftopscreens.com

Web: www.cascaderooftopscreens.com

\*\* NOTE TO SPECIFIER \*\* Delete one of the following two paragraphs; coordinate with requirements of Division 01 section on product options and substitutions.

1. Substitutions: Not permitted

\*\* NOTE TO SPECIFIER \*\* Select one of the two sections referenced in paragraph below.

1. Substitution requests will be considered in accordance with provisions of Section [012500, Substitutions Procedures] [016000, Product Requirements and Substitutions].

2.3 MATERIALS

1. Frames: Carbon steel structural tubing and plates in manufacturer’s standard sizes, conforming to ASTM A500 with manufacturers galvanized coating conforming to ASTM B117 salt spray testing. Wall and plate thickness shall be determined by structural calculations. All welds shall conform to AWS D1.1.
2. Assembly Parts: All assembly bolts and fasteners shall have a hot dipped galvanized coating conforming to ASTM B117 salt spray testing.

\*\* NOTE TO SPECIFIER \*\* Select one of the following five Flashing paragraphs as per project requirements and delete the paragraphs not required.

1. Round Galvanized Roof Flashing: Fabricated from galvanized steel sheet, 24 gauge conforming to ASTM A 653/A 653M. Provide base flange that extends a minimum of 4 inches onto the roof surface on all four sides. Riser shall be tapered to allow easy fit over round supports with minimal gap at top of flashing. Solder all seams for water tightness.
2. Round TPO Roof Flashing: Fabricated from 60 mil, white, single ply TPO sheet conforming to ASTM D 6878. Provide with base flange that extends a minimum of 5 inches (127 mm) onto the roof surface. Hot weld all seams for water tightness.
3. Round PVC Roof Flashing: Fabricated from 60 mil, white, single ply PVC sheet conforming to ASTM D 4434. Provide with base flange that extends a minimum of 5 inches (127 mm) onto the roof surface. Hot weld all seams for water tightness.

\*\* NOTE TO SPECIFIER \*\* Delete any materials below not relevant to this project; add others as required, based on Cascade Iron Works Reccommendation.

1. Steel Hat Channel: Steel sheet conforming to ASTM A 653, Class SS, with a G90 hot-dip galvanized coating.
2. Hardware: Bolts, nuts, washers and screws with a hot dipped galvanized coating.
3. Supply anchorage and assembly parts for fabrications that are in compliance with engineering specs and calculations.
4. Welding Materials: AWS D1.1; type required for materials being welded

\*\* NOTE TO SPECIFIER \*\* Edit one of the two following panel paragraphs based on requirements for the project. Delete the paragraphs not required. The first paragraph is generally standard panels supplied by Cascade Iron Works. The second is for custom panel requirements not listed in the first.

1. Panel:

\*\* NOTE TO SPECIFIER \*\* Select one of the following and delete those not required.

* 1. Profile
		1. Corrugated Panel
		2. Box Rib Panel
		3. 7.2 Panel
		4. Flush Panel
		5. Flush Textured Panel
		6. Standing Seam Panel
		7. Raised Rib Panel

\*\* NOTE TO SPECIFIER \*\* Select one of the following and delete those not required.

* 1. Finish
		1. PVDF fluoropolymer coating
		2. Color selected by Architect out of manufacturers color selections.
		3. Reverse side shall be coated with an off-white primer coat

\*\* NOTE TO SPECIFIER \*\* Select form 20, 22, 24, or 26 gauge material for the panel and trim thickness, and add to blank area

* 1. Metal stock thickness: \_\_\_\_\_\_\_\_\_\_
1. Panel:
	1. Manufacturer \_\_\_\_\_\_\_\_\_\_\_\_\_\_
	2. Product No. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	3. Metal stock thickness \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_-
	4. Panel Trim \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	5. Color \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	6. Finish \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	7. Panel Fasteners \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\*\* NOTE TO SPECIFIER \*\* Use the following paragraph if louvers are required for project. Coordinate section number and section title with louver section being used.

1. Louvers: Refer to Section 10220: Louvers and Vents

2.4 FABRICATION

1. All items shall be fabricated so that joints are tightly fit and flush, with no exposed jagged edges.
2. Supply components required for anchorage of fabrications. Fabricate anchors and related components of same material and finish as fabrication, except where specifically noted otherwise.
3. Trim: To be fabricated from flat sheet metal, the thickness and finish matching the facing panel. Metal to be hemmed per SMACNA guidelines.

**PART 3 – EXECUTION**

3.1 EXAMINATION

* + 1. Examine area where work will be installed to verify the installation can be performed in accordance with the Drawings and structural calculation requirements without interference from other equipment or trades.
		2. If preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.
		3. Do not begin installation until conditions have been properly prepared.

3.2 PREPARATION

* + 1. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.
		2. Clean surfaces thoroughly prior to installation.

3.3 INSTALLATION

* + 1. Install in accordance with manufacturer's instructions.
		2. Install components plumb and level, accurately fitted, free from distortion or defects.
		3. Anchor fabrications to structure as indicated.
		4. Install all roof flashings and boots per the roof membrane manufacturer’s specifications to ensure a watertight connection.
		5. Separate dissimilar metals and use gasketed fasteners, isolation shim, or isolation tape to eliminate possibility of corrosive or electrolytic action between metals.
		6. Exercise care when installing components so as not to damage finish surfaces. Touch up as required to repair damaged finishes.
		7. Remove all protective masking from material immediately after installation.

3.4 CLEANING AND PROTECTION

* + 1. Remove any protective coverings or masking from parts or panels immediately after installation, unless instructed contrary by the manufacturers written instructions.
		2. Protect installed products until completion of project. If minor damage to finishes occurs, repair damage in accordance with manufacturer’s recommendations; provide replacement components if repaired finishes are unacceptable to Architect.
		3. Prior to Substantial Completion: Remove dust or other foreign matter from component surfaces; clean finishes in accordance with manufacturer’s instructions.

END OF SECTION