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SECTION 08 34 36 – RADIO FREQUENCY SHIELDED DOOR ASSEMBLY

1. GENERAL
	1. section includes
		1. This section includes steel RF-Tight Doors and frames for facilities designed to contain radio frequency (RF) energy generated from electronic equipment, and/or shield susceptible equipment from electromagnetic interference.
	2. RELATED sections
		1. Section 08700 - Door Hardware.
		2. Section 09900 - Paints and Coatings.
	3. References
		1. ASTM A 1008 - Standard Specification for Steel, Carbon, Cold-Rolled Sheet, Commercial Quality.
		2. ASTM A 569 - Standard Specification for Steel, Carbon, (0.15 Maximum Percent), Hot-Rolled Sheet and Strip, Commercial Quality.
		3. ASTM A 653/A 653M - Standard Specification for Steel Sheet, Zinc Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot Dip Process.
		4. ASTM B 117 - Standard Method of Salt Spray (Fog) Testing.
		5. ASTM D 1735 - Standard Practice for Testing Water Resistance of Coating Using Water Fog Apparatus.
		6. ASTM E 90 - Standard Test Method for Laboratory Measurement of Airborne-Sound Transmission Loss of Building Partitions.
		7. ASTM E 336 - Standard Test Method for Measurement of Airborne Sound Insulation in Buildings.
		8. ASTM E 413 - Classification for Determination of Sound Transmission Class.
		9. IEEE 299 – Standard Method for Measuring the Effectiveness of Electromagnetic Shielding Enclosures
		10. HMMA 840 - Installation and Storage of Hollow Metal Doors and Frames; Hollow Metal Manufacturers Association.
		11. ASTM A 240/A240M - Standard Specification for Heat-Resisting Chromium and

 Chromium-Nickel Stainless Steel Plate, Sheet, and Strip for Pressure Vessels.

* 1. System description
		1. Design requirements: Door assemblies to include doors, frames, and door hardware to include gasketing systems, fixed door bottoms, cam-lift hinges, thresholds or integral 4-sided frame sill for RF as required to achieve specified performance requirements and military installation or wherever TEMPEST and SCIF standards are a requirement.
		2. Performance requirements: Sound Transmission Coefficient rating of STC50 for installed assembly, when tested as operable door assembly in accordance with ASTM E 90 and ASTM E 413. Radio frequency attenuate at least 60 dB of electric field, plane wave and microwave energy from 1 kHz through 18 GHz when tested in accordance with IEEE 299.
		3. Fire-rated assemblies to be tested in accordance with ASTM E 152 (UL 10B) for specified fire resistance ratings, approved by Underwriters Laboratories, Inc., and to bear fire rating seal of that agency.
	2. submittals
		1. Submit shop drawings for the fabrication and installation of steel radio frequency shielded doors and frames, as required to supplement manufacturers data and showing location by door numbers. Include details of each frame type, elevations of door design, conditions of anchoring, and dimensional elevations.
		2. Submit under provisions of Section 01300.
		3. Product data: Indicate door materials and construction.
		4. Shop drawings: Indicate door opening criteria, elevations, sizes, types, swings; identify and detail cutouts.
		5. Quality assurance submittals:
			1. Test Reports:
				1. Radio Frequency Laboratory tested and field verified per NSA 65-6 and MIL-STD-285. IEEE 299 compliant required.
			2. Certificates:
				1. Contractor's certification that:

Products of this section, as provided, meet or exceed specified requirements.

Manufacturer of products of this section meet specified qualifications.

* + - 1. Manufacturer's instructions: Printed installation instructions for each component.
		1. Closeout submittals:
			1. Warranty documents, executed by manufacturer in Owner's name.
			2. Operation and maintenance data for assembly components.
			3. Certified statement of manufacturer's authorized representative, as specified in FIELD QUALITY CONTROL Article of PART 3 of this section.
			4. Certified test reports of independent testing agency, as specified in FIELD QUALITY CONTROL Article of PART 3 of this section.
	1. QUALITY ASSURANCE
		1. Qualifications:
			1. Manufacturer: Minimum five (5) years documented experience producing systems specified in this section.
			2. Installer: Minimum (5) years documented experience installing systems specified in this section, and approved by the manufacturer.
		2. Custom Specification: Conform where applicable to “Guide Specifications for Sound Control Hollow Metal Doors and Frames”, NAAMM Standard HMMA 865-13, member of NAAMM and/or conforms to these standards.
	2. Shielding effectiveness
		1. Krieger RF doors attenuate at least 60 dB of electric field, plane wave and microwave energy from 1 kHz through 18 GHz. Laboratory tested and field verified per NSA 65-6 and MIL-STD-285. IEEE 299 compliant required.
	3. Delivery, storage and handling
		1. All doors and frames shall be fully crated in wood crates and palletized by door manufacturer for handling by forklift to prevent freight damage.
		2. Store frames in accordance with requirements of HMMA 840.
		3. Store steel doors in accordance with requirements of HMMA 840.
		4. Remove wraps or covers from doors and frames upon delivery at the building site; clean and touch-up scratches or disfigurement caused by shipping or handling promptly with rust inhibitive primer.
		5. Store units on planks or dunnage in a dry location; store doors in a vertical position spaced by blocking.
		6. Store units covered to protect them from damage, but permitting air circulation.
	4. Warranty
		1. Manufacturer’s warranty: furnish system manufacturer’s standard 10-year warranty against defects in product workmanship and materials.
	5. Scheduling
		1. Furnish manufacturer’s mounting templates for door hardware specified in Section 08 71 00 to the manufacturer of products of this section in time for factory preparation for door hardware.
1. PRODUCTS
	1. MANUFACTURERS
		1. Acceptable manufacturer: Krieger Specialty Products, 4880 Gregg Road, Pico Rivera CA 90660; Telephone 562-695-0645, FAX 562-692-0146.
		2. Substitutions: Not permitted. Or as required by project.
		3. Unless otherwise specified for an individual product or material, supply all products specified in this section from the same manufacturer.
	2. MATERIALS
		1. Steel sheet: One of the following:
			1. Cold-rolled steel sheet conforming to ASTM A 1008, commercial quality.
			2. Hot-rolled steel sheet conforming to ASTM A 569, pickled and oiled, commercial quality.
			3. Conductive stainless required for RF. Do Not paint perimeter contact area. Level, cold rolled sheet steel conforming to ASTM A 240, commercial quality.
		2. Galvanized steel sheet: ASTM A 653/A 653M, commercial quality, minimum A60 zinc coating.
		3. Primer: Meeting ASTM B 117 salt spray for 150 hours, and ASTM D 1735 water fog test for organic coatings for 200 hours.
		4. Glazing: Specified in Section 08800.
	3. COMPONENTS
		1. Doors:
			1. Door material shall be 14ga stainless steel
			2. Doors shall have visible seamed construction to accommodate commercially available sheet sizes with provision for Continuous Contact of the RF Gasket.
			3. Horizontal edges:
				1. Close top and bottom edges of doors with continuous steel channels, 16 gage minimum; spot-weld channels to both door faces.
				2. Provide additional flush closing channel at top edge of doors; spot-weld channel to both door faces.
			4. Hardware preparation:
				1. Mortise, reinforce, drill, and tap doors at factory for fully templated mortised hardware only, in accordance with approved hardware schedule and supplied templates.
				2. Provide reinforcing plates at surface-mounted or non-templated hardware locations.
		2. Frames: Fabricate in accordance with Architect-approved shop drawings, and as follows:
			1. Frames for interior use: Fabricate from stainless steel sheet, minimum 14-gage thickness as detailed on architectural drawings.
				1. Profiles and anchors shall be custom fabricated to suit wall conditions and to provide adequate anchoring.
				2. Frames to have continuous contact flange to interface with RF Shielding material on walls and floor (to be provided by others).
			2. When shipping limitations so dictate, fabricate frames for large openings in sections designed for assembly in the field; install alignment plates or angles, of same material and gage as frame, at each joint.
			3. Hardware preparation:
				1. Mortise, reinforce, drill, and tap frames at factory for fully templated mortised hardware only, in accordance with Architect-approved shop drawings and supplied templates.
				2. Provide reinforcing plates at surface-mounted or non-templated hardware locations.
			4. Floor anchors:
				1. Fabricate of same material as frame material; minimum 14 gage.
				2. Weld anchors inside each jamb for floor anchorage.
			5. Plaster guards: Fabricate from minimum 22 gage steel; weld in place at hardware mortises on frames to be set in plaster, masonry, or concrete openings.
			6. Frames will be shipped knock-down for field assembling by others.
			7. Frames will be 4-sided with embedded bottom sill to be attached in the field by others.
		3. RF Gasketing:
			1. Supply gasketing systems, retainers, retainer covers, fixed door bottoms, cam-lift hinges, thresholds / integral 4-sided plate sills as indicated on Architect-approved shop drawings, or specified in manufacturer's product data for project conditions, to achieve specified performance requirements.
				1. The frame shall be factory mounted with a formed stainless-steel gasket retainer that is conductive with the frame.
			2. Krieger door assembly shall be provided with a factory installed RF-tight Monel wire mesh gasket enhanced with flexible, non-woven metallized fabric.
			3. All other door hardware to match as applicable per specified in Section 087100 to achieve performance requirements of the door assembly.
		4. Hardware and hardware preparation:
			1. Factory provided heavy weight hinges.
			2. Factory provided 2-point latching devices for each door leaf.
			3. Factory provided RF gasketed astragal for the meeting stile.
		5. FINISH
			1. All tool marks and surface imperfections shall be removed and exposed faces of all welded joints shall be dressed smooth.
			2. Assemblies shall be treated and shall be coated on all accessible surfaces with a rust-inhibitive primer which meets ASTM B117 salt spray for 150 hours, and ASTM D1735 water fog test for organic coatings for 200 hours, and which is fully cured prior to shipment. Prime shall cover all surfaces, except RF contact points, without runs, smears or bare spots.
2. EXECUTION
	1. EXAMINATION
		1. Verification of conditions:
			1. Prior to installation, check and correct frames for size, swing, squareness, alignment, twist and plumb.
			2. Verify openings are in accordance with approved shop drawings.
		2. Installer's examination:
			1. Have installer of this section examine conditions under which construction activities of this section are to be performed, then submit written notification if such conditions are unacceptable.
			2. Transmit two copies of installer's report to Architect within 24 hours of receipt.
			3. Beginning construction activities of this section before unacceptable conditions have been corrected is prohibited.
			4. Beginning construction activities of this section indicates installer's acceptance of conditions.
	2. PREPARATION
		1. Inspect framing before application to ensure the opening to receive the frames are properly frames, reinforced and that there is a provision for RF Interface.
		2. Inspect all doors and frames for freight or jobsite damage, and review cut outs for conformance to hardware schedule.
	3. INSTALLATION
		1. Install units in accordance with approved shop drawings and manufacturer's printed installation instructions; in addition, install steel components in accordance with HMMA 840.
		2. Securely attach to wall framing system. Frames to be installed plumb and square.
		3. Provide any necessary additional reinforcing to ensure a rigid and permanent installation.
		4. Hang doors and install hardware and adjust for smooth operation without binding or sticking.
		5. Install gasketing systems, retainers, retainer covers, fixed door bottoms, cam-lift hinges, thresholds and sills in accordance with manufacturer's printed instructions.
		6. Installation of all other door hardware is specified in Section 08710.
		7. Field painting is specified in Section 09900.
			1. Remove hardware prior to painting and re-intstall after painting is complete.
		8. Allow proper clearances in accordance with manufacturer’s printed instructions.
	4. FIELD QUALITY CONTROL
		1. Engage and pay for the field services of manufacturer's authorized representative to train, supervise and certify installer ahead of time (preferably before labor begins, at setting of 1st frame, hanging of 1st door and ahead of handover, field testing or the like -- or at least:
			1. Inspect completed installation of door and frame assemblies.
			2. Test all components through a minimum of ten complete cycles of operation.
			3. Verify each component is correctly installed.
			4. Direct installer in adjusting components for correct operation.
			5. Issue certified statement of compliance of installed door and frame assemblies to Architect-approved shop drawings.
			6. Instruct Owner's maintenance personnel in correct operation and maintenance procedures for components of door and frame assemblies.
		2. Notify Architect a minimum of four (4) calendar days prior to scheduled testing dates.
	5. maintenance
		1. Instruct the Owner’s Maintenance Personnel regarding the proper operation and maintenance of these doors.

END OF SECTION