

Section 0570001 R
REPAIRING DAMAGED OR MISSING ORNAMENTAL METAL

PART 1 - GENERAL

1.01 SUMMARY

- A. This procedure includes guidance on repairing existing ornamental metal work by removing, repairing and reinstalling existing pieces, or if too damaged, installing new ornamental metal to match.
- B. See section 010000 for general requirements to be reviewed along with this procedure. These guidelines cover the following sections:
 - 1. Safety Precautions
 - 2. Historic Structures Precautions
 - 3. Submittals
 - 4. Quality Assurance
 - 5. Delivery, Storage and Handling
 - 6. Project/Site Conditions
 - 7. Sequencing and Scheduling
 - 8. General Protection (Surface and Surrounding)

These guidelines should be reviewed prior to performing this procedure and should be followed, when applicable, along with recommendations from the Contracting Officer's Technical Representative (COTR).

1.02 REFERENCES

- A. American Society for Testing and Materials (ASTM), 100 Barr Drive, West Conshohocken, PA 19428, (610) 832-9585 or FAX (610) 832-9555.
- B. American Welding Society (AWS), P.O. Box 351040, 550 Le Jeune Road, NW, Miami, FL 33135.
- C. National Association of Architectural Metal Manufacturers (NAAMM), 221 N. LaSalle Street, Chicago, IL 60601.
- D. Steel Structures Painting Council (SSPC), 4400 Fifth Avenue, Pittsburgh, PA 15213.

1.03 SUBMITTALS

- A. Product Data: Submit manufacturer's fabricator's and finisher's specifications and installation instructions for products used in ornamental metal work, including finishing materials and methods.
- B. Submit manufacturer's technical data for each product indicated including chemical analysis and recommendations for their application and use. Include test reports and certifications substantiating that products comply with requirements.
- C. Shop Drawings: Submit shop drawings for fabrication and installation or ornamental metal work. Include plans, elevation and detail sections. Indicate materials, methods, finishes and types of joinery, fasteners, anchorages and accessory items; specify finishes. Provide setting diagrams and templates for anchorages, sleeves and bolts installed by others. Fabricated parts and fasteners to be of the same metal as historic to avoid galvanic corrosion.
- D. Samples: Submit samples, 6" square, of each metal and finish required. Prepare samples on metal of same alloy and thickness to be used for the work. Where normal color and texture variations are to be expected, include 2 or more units in each set of samples showing the limits of such variations. Full-size samples will be prepared and submitted for the architect's approval for each article.

1.04 SYSTEM DESCRIPTION

A. Design Requirements:

1. Design components to allow for expansion and contraction for a minimum ambient temperature range of 100 F (37.8 C) without causing buckling, excessive opening of joint or over stressing of welds and fasteners.
2. Form ornamental metal work to the required shapes and sizes, with true curves, lines and angles. Provide necessary rebates, lugs and brackets for assembly of units. Use concealed fasteners wherever possible.
3. Comply with AWS for recommended practices in shop welding. Provide welds behind finished surfaces without distortion or discoloration of the exposed side. Clean exposed welded joints of all welding flux, and dress on all exposed and contact surfaces.
4. Mill joints to a tight, hairline fit. Cope or miter corner joints. Form joints exposed to weather to exclude water penetration.
5. Provide castings that are sound and free of warp or defects which impair strength and appearance. Mill joints to a close fit and finish exposed surfaces to smooth, sharp, well-defined lines and arises.
6. Comply with NAAMM "Metal Finishes Manual" for finish designations and application recommendations.
7. Match color, direction, and texture of existing ornamental metal work for new and replacement pieces.

1.05 QUALITY ASSURANCE

- A. Mock-ups: NOT USED.

1.06 PROJECT/SITE CONDITIONS

- A. Protect surrounding surfaces of building from damage resulting from ornamental metal restoration work.

PART 2---PRODUCTS

2.01 MATERIALS

- A. Provide materials which have been selected from their surface flatness, smoothness and freedom from surface blemishes where exposed to view in the finished unit. Exposed-to-view surfaces which exhibit pitting, seam marks, roller marks, "oil-canning" stains, discolorations or other imperfections on the finished units will not be acceptable.
- B. Aluminum: Comply with the following standards for the forms and types of aluminum for the required items of work.
1. Aluminum Extrusions: Alloy and temper recommended by aluminum producer or finisher for type of use and finish indicated, and with not less than the strength and durability properties specified in ASTM B221 for 6063-T5.
 2. Bars, Rods and Wire: ASTM B211.
 3. Castings: ASTM B26 or B108; alloy 214 for natural anodized finish, and alloy 43 for color anodized or baked enamel finish.
 4. Forgings: ASTM B247, alloy 6061-T6.
- C. Stainless Steel: Comply with the following standards for the forms and types of stainless steel for the required items of work.
1. Type: AISI Type 302/304.
 2. Bar Stock: ASTM A276.
 3. Plate: ASTM A167.

4. Castings: ASTM A296, iron-chromium-nickel alloy.
- D. Bronze: Comply with the following standards for the forms and type of bronze for the required items of work. Alloys listed refer to standards of the Copper Development Association.
 1. Temper: Provide bronze materials in standard commercial tempers and hardness, as required for fabrication, strength and durability.
 2. Extruded Shapes: ASTM B455; Alloy C38500, Architectural Bronze.
 3. Plates and Bars: Alloy C28000 Muntz Metal.
 4. Rod and Wire: ASTM B134, Alloy C23000.
 5. Castings: ASTM B584; match color of other bronze.
- E. Miscellaneous Materials:
 1. Welding Electrodes and Filler Metal: Type and alloy of filler metal and electrodes as recommended by producer of the metal to be welded, and as required for color match, strength and compatibility in the fabricated items.
 2. Fasteners: Furnish of same basic metal and alloy, matching finished color and texture as the metal being fastened. Provide Phillips flat-head screws for exposed fasteners, countersunk for flush fitting.
 3. Anchors and Inserts: Furnish inserts to be set in concrete or masonry work, and provide other anchoring devices as required for the installation of ornamental metal items. Provide toothed steel or lead shield expansion bolt devices for drilled-in-place anchors. Provide galvanized or cadmium-coated anchors and inserts for exterior installations.
 - a. Provide units with exposed surfaces matching the texture and finish of the metal item anchored.
 4. Bituminous Paint: SSPC-Paint 12 (cold-applied asphalt mastic).
 5. Protective Lacquer: Clear non-yellowing for protection of the finished metal surface.

PART 3---EXECUTION

3.01 PREPARATION

- A. Protection: Protect mechanical finish on exposed surfaces from damage by application of strippable temporary protective covering prior to shipment.
- B. Surface Preparation: Coat concealed surface which will be in contact with concrete, masonry, wood, or dissimilar metals, in exterior work and work to be built into exterior and below grade walls and decks, with a heavy coat of bituminous paint. Do not extend coating onto exposed surfaces.

3.02 ERECTION, INSTALLATION, APPLICATION

- A. Coordinate and furnish anchorages and setting drawings, diagrams, templates, instructions and directions for the installation of items having integral anchors which are to be embedded in concrete or masonry construction. Coordinate delivery of such items to the project site.
- B. Provide anchorage devices and fasteners where necessary for securing ornamental metal items to in-place construction; including, threaded fasteners for concrete and masonry inserts, toggle bolts, through-bolts, lag bolts, wood screws and other connectors as required.
- C. Perform all cutting, drilling and fitting required for the installation of the ornamental metal items. Set the work

accurately in location, alignment and elevation, plumb, level and true, measured from established lines and levels.

- D. Form tight joints with exposed connections accurately fitted with uniform reveals and specs for sealants and joint fillers. Where cutting, welding and grinding are required for proper shop fitting and jointing of the work, restore finishes to eliminate any evidence of such corrective work.
- E. Do not cut or abrade finishes which cannot be completely restored in the field. Return items with such finishes to the shop for required alterations, followed by complete refinishing or provide new units at Contractor's option.

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