

SECTION 057000 - DECORATIVE METAL

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Decorative metal trim.
 - 2. Metal reveals.

1.2 COORDINATION

- A. Coordinate installation of anchorages for decorative metal items. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver such items to Project site in time for installation.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated, including finishing materials.
- B. Shop Drawings: Show fabrication and installation details for decorative metal.
 - 1. Include plans, elevations, component details, and attachments to other work.
 - 2. Indicate materials and profiles of each decorative metal member, fittings, joinery, finishes, fasteners, anchorages, and accessory items.
- C. Samples for Verification: For each type of exposed finish required.
 - 1. Sections of linear shapes.
 - 2. Samples of welded joints showing quality of workmanship and color matching of materials.

1.4 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For qualified fabricator and finisher.
- B. Welding certificates.

1.5 QUALITY ASSURANCE

- A. Fabricator Qualifications: A firm experienced in producing decorative metal similar to that indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.
- B. Installer Qualifications: Fabricator of products.
- C. Anodic Finisher Qualifications: A firm experienced in successfully applying anodic finishes of type indicated and employing competent control personnel to conduct continuing, effective quality-control program to ensure compliance with requirements.
- D. Powder-Coating Applicator Qualifications: A firm experienced in successfully applying powder coatings of type indicated and employing competent control personnel to conduct continuing, effective quality-control program to ensure compliance with requirements.
- E. Welding Qualifications: Qualify procedures and personnel according to the following:
 - 1. AWS D1.1/D1.1M, "Structural Welding Code - Steel."
 - 2. AWS D1.2/D1.2M, "Structural Welding Code - Aluminum."
 - 3. AWS D1.3, "Structural Welding Code - Sheet Steel."
 - 4. AWS D1.6, "Structural Welding Code - Stainless Steel."
- F. Mockups: Build mockups to verify selections made under sample submittals and to demonstrate aesthetic effects and set quality standards for fabrication and installation.
 - 1. Build mockups for the following types of decorative metal:
 - 2. Approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.
- G. Preinstallation Conference: Conduct conference at Project site.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Store decorative metal in a well-ventilated area, away from uncured concrete and masonry, and protected from weather, moisture, soiling, abrasion, extreme temperatures, and humidity.
- B. Deliver and store cast-metal products in wooden crates surrounded by sufficient packing material to ensure that products will not be cracked or otherwise damaged.

1.7 FIELD CONDITIONS

- A. Field Measurements: Verify actual locations of walls and other construction contiguous with decorative metal by field measurements before fabrication and indicate measurements on shop drawings.

PART 2 - PRODUCTS

2.1 METALS, GENERAL

- A. Metal Surfaces, General: Provide materials with smooth, flat surfaces unless otherwise indicated. Provide materials without seam marks, roller marks, rolled trade names, stains, discolorations, or blemishes.

2.2 ALUMINUM

- A. Aluminum, General: Provide alloy and temper recommended by aluminum producer and finisher for type of use and finish indicated, and with strength and durability properties for each aluminum form required not less than that of alloy and temper designated below.
- B. Extruded Bars and Shapes: ASTM B 221, Alloy 6063-T5/T52.
- C. Extruded Structural Round Tubing: ASTM B 429/B 429M, Alloy 6063-T6.
- D. Drawn Seamless Tubing: ASTM B 210 or ASTM B 483/B 483M, Alloy 6063-T832.
- E. Plate and Sheet: ASTM B 209, Alloy 3003-H14 easily formed and is commonly used for general sheet metal work and Alloy 5005-H32 smooth, high-quality finish and is a preferred choice for anodizing.

2.3 COPPER ALLOYS

- A. Copper and Copper Alloys, General: Provide alloys indicated and temper to suit application and forming methods but with strength and stiffness not less than H01 (quarter-hard) for plate, sheet, strip, and bars and H55 (light-drawn) for tube and pipe.
- B. Extruded Shapes, Bronze: ASTM B 455, Alloy UNS No. C38500 (architectural bronze).
- C. Extruded Shapes, Brass: ASTM B 249/B 249M, Alloy UNS No. C36000 (free-cutting brass).
- D. Extruded Shapes, Nickel Silver: ASTM B 249/B 249M, Alloy UNS No. C79600.

- E. Seamless Pipe, Bronze: ASTM B 43, Alloy UNS No. C23000 (red brass, 85 percent copper).
- F. Seamless Tube, Bronze: ASTM B 135, Alloy UNS No. C23000 (red brass, 85 percent copper).
- G. Seamless Tube, Brass: ASTM B 135, Alloy UNS No. C26000 (cartridge brass, 70 percent copper).
- H. Seamless Tube, Copper: ASTM B 75, Alloy UNS No. C12200 (phosphorous deoxidized, high residual phosphorous copper).
- I. Plate, Sheet, Strip, and Bars; Bronze: ASTM B 36/B 36M, Alloy UNS No. C28000 (muntz metal, 60 percent copper).
- J. Plate, Sheet, Strip, and Bars; Brass: ASTM B 36/B 36M, Alloy UNS No. C26000 (cartridge brass, 70 percent copper).
- K. Plate, Sheet, Strip, and Bars; Copper: ASTM B 152/B 152M, Alloy UNS No. C11000 (electrolytic tough pitch copper) or UNS No. C12200 (phosphorous deoxidized, high-residual phosphorous copper).

2.4 STAINLESS STEEL

- A. Tubing: ASTM A 554, Grade MT 304.
- B. Pipe: ASTM A 312/A 312M, Grade TP 304.
- C. Sheet, Strip, Plate, and Flat Bar: ASTM A 666, Type 304.
- D. Bars and Shapes: ASTM A 276, Type 304.

2.5 STEEL AND IRON

- A. Tubing: ASTM A 500 (cold-formed).
- B. Bars: Hot-rolled, carbon steel complying with ASTM A 29/A 29M, Grade 1010.
- C. Plates, Shapes, and Bars: ASTM A 36/A 36M.
- D. Cast Iron: Either gray iron, ASTM A 48/A 48M, or malleable iron, ASTM A 47/A 47M, unless otherwise indicated.
- E. Steel Sheet, Cold Rolled: ASTM A 1008/A 1008M, either commercial steel or structural steel, exposed.

2.6 FASTENERS

- A. Fastener Materials: Unless otherwise indicated, provide the following:
1. Aluminum Items: Type 304 stainless-steel fasteners.
 2. Copper-Alloy (Bronze) Items: Silicon bronze (Alloy 651 or Alloy 655) fasteners where concealed, muntz metal (Alloy 280) fasteners where exposed.
 3. Copper-Alloy (Brass) Items: Silicon bronze (Alloy 651 or Alloy 655) fasteners where concealed, brass (Alloy 260 or 360) fasteners where exposed.
 4. Stainless-Steel Items: Type 304 stainless-steel fasteners.
 5. Uncoated-Steel Items: Plated steel fasteners complying with ASTM B 633, Class Fe/Zn 25 for electrodeposited zinc coating where concealed, Type 304 stainless-steel fasteners where exposed.
 6. Class Fe/Zn 25 for electrodeposited zinc coating.
 7. Dissimilar Metals: Type 304 stainless-steel fasteners.
- B. Fasteners for Anchoring to Other Construction: Unless otherwise indicated, select fasteners of type, grade, and class required to produce connections suitable for anchoring indicated items to other types of construction indicated.
- C. Provide concealed fasteners for interconnecting components and for attaching decorative metal items to other work unless otherwise indicated.
1. Provide Phillips flat-head machine screws for exposed fasteners unless otherwise indicated.
- D. Anchors, General: Anchors capable of sustaining, without failure, a load equal to six times the load imposed when installed in unit masonry and four times the load imposed when installed in concrete, as determined by testing according to ASTM E 488, conducted by a qualified independent testing agency.
- E. Post-Installed Anchors: Torque-controlled expansion type or chemical type.
1. Material for Interior Locations: Carbon-steel components zinc plated to comply with ASTM B 633 or ASTM F 1941, Class Fe/Zn 5 unless otherwise indicated.
 2. Material for Locations Where Stainless Steel Is Indicated: Alloy Group 1 stainless-steel bolts, ASTM F 593, and nuts, ASTM F 594.

2.7 MISCELLANEOUS MATERIALS

- A. Welding Rods and Bare Electrodes: Select according to AWS specifications for metal alloy welded.

1. For aluminum, provide type and alloy as recommended by producer of metal to be welded and as required for color match, strength, and compatibility in fabricated items.
- B. Brazing Rods: For copper alloys, provide type and alloy as recommended by producer of metal to be brazed and as required for color match, strength, and compatibility in fabricated items.
- C. Cleaner: Provide a liquid emulsifiable alkaline soak cleaner suitable for metal surfaces. Basis-of-Design Product: E-Kleen 111; Epi, 17000 West Lincoln Avenue, New Berlin, WI 53151, voice (262) 786-9330.
- D. Deoxidizer/Activator: Provide a mixture or dry, granular, free-flowing acid salts which, when dissolved in water, are used to deoxidize and activate metal surfaces prior to plating or chemical conversion finishing. Basis-of-Design Product: E-Pik 211; Epi, 17000 West Lincoln Avenue, New Berlin, WI 53151, voice (262) 786-9330.
- E. Black Oxide Finishing Agent for Steel: Provide an alkaline salt and oxidizing agent mixture containing penetrants, catalysts, activators, rectifiers and wetters which, when dissolved in water and heated, produce a black oxide finish on steel. Basis-of-Design Product: Ultra-Blak 400; Epi, 17000 West Lincoln Avenue, New Berlin, WI 53151, voice (262) 786-9330.
- F. Black Oxide Finishing Agent for Stainless Steel: Provide an alkaline salt and oxidizing agent mixture containing penetrants, catalysts, activators, rectifiers and wetters which, when dissolved in water and heated, produce a black oxide finish on stainless steel. Basis-of-Design Product: Ultra-Blak 407; Epi, 17000 West Lincoln Avenue, New Berlin, WI 53151, voice (262) 786-9330.
- G. Gloss Acrylic Lacquer: Provide a lacquer sealer designed to produce a hard, dry, clear finish. Basis-of-Design Product: E-Tec 520; Epi, 17000 West Lincoln Avenue, New Berlin, WI 53151, voice (262) 786-9330.
- H. Lacquer for Copper Alloys: Clear, acrylic lacquer specially developed for coating copper-alloy products.
- I. Shop Primers: Provide primers that comply with Section 099123 "Interior Painting."
- J. Intermediate Coats and Topcoats for Steel: Provide products that comply with Section 099123 "Interior Painting."
- K. Bituminous Paint: Cold-applied asphalt emulsion complying with ASTM D 1187.

2.8 FABRICATION, GENERAL

- A. Assemble items in the shop to greatest extent possible to minimize field splicing and assembly. Disassemble units only as necessary for shipping and handling limitations. Clearly mark units for reassembly and coordinated installation. Use connections that maintain structural value of joined pieces.
- B. Make up wire-rope assemblies in the shop to field-measured dimensions with fittings machine swaged. Minimize amount of turnbuckle take-up used for dimensional adjustment so maximum amount is available for tensioning wire ropes. Tag wire-rope assemblies and fittings to identify installation locations and orientations for coordinated installation.
- C. Form decorative metal to required shapes and sizes, true to line and level with true curves and accurate angles and surfaces. Finish exposed surfaces to smooth, sharp, well-defined lines and arris.
- D. Form bent-metal corners to smallest radius possible without causing grain separation or otherwise impairing the Work.
- E. Form simple and compound curves in bars, pipe, tubing, and extruded shapes by bending members in jigs to produce uniform curvature for each configuration required; maintain cross section of member throughout entire bend without buckling, twisting, cracking, or otherwise deforming exposed surfaces.
- F. Cut, drill, and punch metals cleanly and accurately. Remove burrs and ease edges to a radius of approximately 1/32 inch unless otherwise indicated. Remove sharp or rough areas on exposed surfaces.
- G. Mill joints to a tight, hairline fit. Cope or miter corner joints. Fabricate connections that will be exposed to weather in a manner to exclude water.
- H. Provide necessary rebates, lugs, and brackets to assemble units and to attach to other work. Cut, reinforce, drill, and tap as needed to receive finish hardware, screws, and similar items unless otherwise indicated.
- I. Comply with AWS for recommended practices in shop welding. Weld behind finished surfaces without distorting or discoloring exposed side. Clean exposed welded joints of flux, and dress exposed and contact surfaces.
 - 1. Where welding cannot be concealed behind finished surfaces, finish joints to comply with NOMMA's "Voluntary Joint Finish Standards" for Type 1 Welds: no evidence of a welded joint.

2.9 DECORATIVE METAL TRIM

- A. Fabricate from aluminum shapes, sheet or plate of thickness, size, and pattern indicated. Roll, press, and grind metal to flatten and to remove burrs and deformations. Miter corners and connect with concealed splice plates.

2.10 METAL REVEALS

- A. Fabricate metal reveals for wood paneling from 3/4-by-3/4-by-1/16-inch extruded-bronze 3/4-by-3/4-by-0.025-inch brake-formed, stainless-steel 3/4-by-3/4-by-0.015-inch brake-formed titanium channels. Drill for mounting screws 6 inches from ends of channels and not more than 24 inches o.c. Locate mounting screws at same heights for all channels. Provide black-finished, hex-socket, wafer-head screws for mounting reveals.

2.11 FINISHES, GENERAL

- A. Decorative metal finishes are designated with Item Code MT# in the Finish Schedule and on the Drawings.
- B. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.
- C. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

2.12 ALUMINUM FINISHES

- A. Finish designations prefixed by AA comply with the system established by the Aluminum Association for designating aluminum finishes.
- B. Mechanical Finishes:
 - 1. Buffed, Mechanical Finish: AA DAF-45, M21, Smooth Specular finish.
 - 2. Buffed, Mechanical Finish: AA DAF-45, M22, Specular finish.
 - 3. Directional Textured, Mechanical Finish: AA DAF-45, M31, Fine Satin finish.
 - 4. Directional Textured, Mechanical Finish: AA DAF-45, M32, Medium Satin finish.
 - 5. Directional Textured, Mechanical Finish: AA DAF-45, M33, Coarse Satin finish.
 - 6. Directional Textured, Mechanical Finish: AA DAF-45, M34, Hand Rubbed finish.
 - 7. Directional Textured, Mechanical Finish: AA DAF-45, M35, Brushed finish.
 - 8. Nondirectional Textured, Mechanical Finish: AA DAF-45, M41, Extra Fine Matte finish.

9. Nondirectional Textured, Mechanical Finish: AA DAF-45, M42, Fine Matte finish.
 10. Nondirectional Textured, Mechanical Finish: AA DAF-45, M43, Medium Matte finish.
 11. Nondirectional Textured, Mechanical Finish: AA DAF-45, M44, Coarse Matte finish.
 12. Nondirectional Textured, Mechanical Finish: AA DAF-45, M45, Fine Shot Blast finish.
 13. Nondirectional Textured, Mechanical Finish: AA DAF-45, M46, Medium Shot Blast finish.
 14. Nondirectional Textured, Mechanical Finish: AA DAF-45, M47, Coarse Shot Blast finish.
- C. Clear Anodic Finish: AAMA 611, AA-M12C22A31, Class II, 0.010 mm or thicker.
- D. Color Anodic Finish: AAMA 611, AA-M12C22A32/A34, Class II, 0.010 mm or thicker.
1. Color: Match Architect's sample.
- E. Baked-Enamel or Powder-Coat Finish: AAMA 2603 except with a minimum dry film thickness of 1.5 mils. Comply with coating manufacturer's written instructions for cleaning, conversion coating, and applying and baking finish.
1. Color and Gloss: Match Architect's sample.

2.13 COPPER-ALLOY FINISHES

- A. Finish designations for copper alloys comply with the system established for designating copper-alloy finish systems defined in NAAMM's "Metal Finishes Manual for Architectural and Metal Products."
- B. Buffed Finish: M21 (Mechanical Finish: buffed, smooth specular).
- C. Hand-Rubbed Finish: M31-M34 (Mechanical Finish: Directionally textured, fine satin; Mechanical Finish: Directionally textured, hand rubbed).
- D. Medium-Satin Finish: M32 (Mechanical Finish: Directionally textured, medium satin).
- E. Fine-Matte Finish: M42 (Mechanical Finish: Nondirectional finish, fine matte).
- F. Buffed Finish, Lacquered: M21-O6x (Mechanical Finish: Buffed, smooth specular; Coating: Clear organic, air drying, as specified below):
1. Clear, Organic Coating: Lacquer specified for copper alloys, applied by air spray in two coats per manufacturer's written instructions, with interim drying, to a total thickness of 1 mil.

- G. Hand-Rubbed Finish, Lacquered: M31-M34-O6x (Mechanical Finish: Directionally textured, fine satin; Mechanical Finish: Directionally textured, hand rubbed; Coating: Clear organic, air drying, as specified below):
1. Clear, Organic Coating: Lacquer specified for copper alloys, applied by air spray in two coats per manufacturer's written instructions, with interim drying, to a total thickness of 1 mil.
- H. Medium-Satin Finish, Lacquered: M32-O6x (Mechanical Finish: Directionally textured, medium satin; Coating: Clear organic, air drying, as specified below):
1. Clear, Organic Coating: Lacquer specified for copper alloys, applied by air spray in two coats per manufacturer's written instructions, with interim drying, to a total thickness of 1 mil.
- I. Fine-Matte Finish, Lacquered: M42-O6x (Mechanical Finish: Nondirectional finish, fine matte; Coating: Clear organic, air drying, as specified below):
1. Clear, Organic Coating: Lacquer specified for copper alloys, applied by air spray in two coats per manufacturer's written instructions, with interim drying, to a total thickness of 1 mil.
- J. Statuary Conversion Coating over Satin Finish: M31-C55 (Mechanical Finish: Directionally textured, fine satin; Chemical Finish: Conversion coating, sulfide), with color matching Architect's sample.
- K. Patina Conversion Coating: M36-C12-C52 (Mechanical Finish: Directionally textured, uniform; Chemical Finish: Nonetched cleaned, degreased; Chemical Finish: Conversion coating, ammonium sulfate), with color matching Architect's sample.
- L. Statuary Conversion Coating, Bright Relieved and Lacquered: M12-C55-M2x-O6x (Mechanical Finish: Matte finish; Chemical Finish: Conversion coating, sulfide; Mechanical Finish: Buffed, as specified; Coating: Clear, organic, air drying, as specified below), with color matching Architect's sample:
1. Clear, Organic Coating: Lacquer specified for copper alloys, applied by air spray in two coats per manufacturer's written instructions, with interim drying, to a total thickness of 1 mil.
- M. Blackened, Bright Relieved, and Lacquered: M33-O60-M2x-O6x (Mechanical Finish: Directionally textured, coarse satin; Coating: Black, air drying; Mechanical Finish: Buffed, as specified; Coating: Clear, organic, air drying, as specified below), with blackening and buffing matching Architect's sample:

1. Clear, Organic Coating: Lacquer specified for copper alloys, applied by air spray in two coats per manufacturer's written instructions, with interim drying, to a total thickness of 1 mil.

2.14 STAINLESS-STEEL FINISHES

- A. Surface Preparation: Remove tool and die marks and stretch lines, or blend into finish.
- B. Polished Finishes: Grind and polish surfaces to produce uniform finish, free of cross scratches.
 1. Run grain of directional finishes with long dimension of each piece.
- C. Directional Satin Finish: No. 4.
- D. Dull Satin Finish: No. 6.
- E. Reflective, Directional Polish: No. 7.
- F. Mirrorlike Reflective, Nondirectional Polish: No. 8.
- G. When polishing is completed, passivate and rinse surfaces. Remove embedded foreign matter and leave surfaces chemically clean.
- H. Blackened Stainless Steel Finish:
 1. Prepare metal surfaces by cleaning and degreasing thoroughly. Clean metal in alkaline soak cleaner bath between +160 deg F and +180 deg F.
 2. Rinse metal in overflowing cold water rinse tank to remove residual cleaner.
 3. Deoxidize and activate metal surfaces with specified Deoxidizer/Activator or a comparable product. Submerge metal components in acid salts bath between +150 deg F and +180 deg F.
 4. Rinse metal surfaces in overflowing cold water tank to remove residual activator.
 5. Mix blackening solution with water in proportion recommended by blackening solution manufacturer, and heat to +250 deg F. Maintain temperature for at least one hour to ensure that salts have been properly dissolved.
 6. Immerse metal in blackening solution from two to fifteen minutes. Do not exceed immersion time of fifteen minutes. Maintain temperature of blackening solution between +250 deg F. and +260 deg F.
 7. Rinse metal surfaces in overflowing cold water tank to remove residual blackening solution.
 8. Remove from bath and allow to air dry.
 9. Apply clear lacquer to exposed surfaces.

2.15 STEEL AND IRON FINISHES

- A. Preparing Nongalvanized Items for Shop Priming: Prepare uncoated ferrous-metal surfaces to comply with SSPC-SP 7/NACE No. 4, "Brush-off Blast Cleaning."
- B. Primer Application: Apply shop primer to prepared surfaces of items unless otherwise indicated. Comply with requirements in SSPC-PA 1, "Paint Application Specification No. 1: Shop, Field, and Maintenance Painting of Steel," for shop painting. Primer need not be applied to surfaces to be embedded in concrete or masonry.
 - 1. Shop prime uncoated ferrous-metal surfaces with primers specified in Section 099123 "Interior Painting" unless indicated.
- C. Shop-Painted Finish: Comply with Section 099123 "Interior Painting."
 - 1. Color: As indicated in Finish Schedule by manufacturer's designations.
- D. Powder-Coat Finish: Prepare, treat, and coat nongalvanized ferrous metal to comply with resin manufacturer's written instructions and as follows:
 - 1. Prepare uncoated ferrous-metal surfaces to comply with SSPC-SP 6/NACE No. 3, "Commercial Blast Cleaning."
 - 2. Treat prepared metal with iron-phosphate pretreatment, rinse, and seal surfaces.
 - 3. Apply thermosetting polyester or acrylic urethane powder coating with cured-film thickness not less than 1.5 mils.
 - 4. Color: As indicated in Finish Schedule by manufacturer's designations.
- E. Blackened Steel Finish:
 - 1. Prepare metal surfaces by cleaning and degreasing thoroughly. Clean metal in alkaline soak cleaner bath between +160 deg F and +180 deg F.
 - 2. Rinse metal in overflowing cold water rinse tank to remove residual cleaner.
 - 3. Deoxidize and activate metal surfaces with specified Deoxidizer/Activator or a comparable product. Submerge metal components in acid salts bath between +120 deg F and +180 deg F.
 - 4. Rinse metal surfaces in overflowing cold water tank to remove residual activator.
 - 5. Mix blackening solution with water in proportion recommended by blackening solution manufacturer, and heat to +285 deg F.
 - 6. Immerse metal in blackening solution from five to twenty minutes. Do not exceed immersion time of twenty minutes. Maintain temperature of blackening solution at +285 deg F.
 - 7. Rinse metal surfaces in overflowing cold water tank to remove residual blackening solution.
 - 8. Remove from bath and allow to air dry.

9. Apply clear lacquer to exposed surfaces.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

- A. Provide anchorage devices and fasteners where needed to secure decorative metal to in-place construction.
- B. Perform cutting, drilling, and fitting required to install decorative metal. Set products accurately in location, alignment, and elevation, measured from established lines and levels. Provide temporary bracing or anchors in formwork for items to be built into concrete, masonry, or similar construction.
- C. Fit exposed connections accurately together to form tight, hairline joints or, where indicated, uniform reveals and spaces for sealants and joint fillers. Where cutting, welding, and grinding are required for proper shop fitting and jointing of decorative metal, restore finishes to eliminate evidence of such corrective work.
- D. Do not cut or abrade finishes that 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 as required.
- E. Install concealed gaskets, joint fillers, insulation, and flashings as work progresses.
- F. Restore protective coverings that have been damaged during shipment or installation. Remove protective coverings only when there is no possibility of damage from other work yet to be performed at same location.
 - 1. Retain protective coverings intact; remove coverings simultaneously from similarly finished items to preclude nonuniform oxidation and discoloration.
- G. Field Welding: Comply with applicable AWS specification for procedures of manual shielded metal arc welding and requirements for welding and for finishing welded connections in "Fabrication, General" Article. Weld connections that are not to be left as exposed joints but cannot be shop welded because of shipping size limitations.
- H. Field Brazing: Comply with requirements for brazing and for finishing brazed connections in "Fabrication, General" Article. Braze connections that are not to be left as exposed joints but cannot be shop brazed because of shipping size limitations.
- I. Corrosion Protection: Coat concealed surfaces of aluminum that will be in contact with grout, concrete, masonry, wood, or dissimilar metals, with a heavy coat of bituminous paint.

3.2 INSTALLING DECORATIVE METAL TRIM

- A. Assemble trim and complete fabrication at Project site to the extent that it was not completed in the shop.
- B. Install trim level, plumb, true, and straight. Shim as required with concealed shims. Install level and plumb to a tolerance of 1/8 inch in 96 inches.
- C. Scribe and cut trim to fit adjoining work, refinish cut surfaces, and repair damaged finish at cuts.
- D. Anchor trim to anchors or blocking built in or directly attached to substrates. Secure with countersunk, concealed fasteners. Use fine finishing screws for exposed fastening, countersunk and filled flush with trim using filler matching finish of items being installed.
- E. Install with minimum number of joints possible, using full-length pieces (from maximum length of material available) to greatest extent possible. Do not use pieces less than 96 inches long except where shorter single-length pieces are necessary.

3.3 CLEANING AND PROTECTION

- A. Unless otherwise indicated, clean metals by washing thoroughly with clean water and soap, rinsing with clean water, and drying with soft cloths.
- B. Clean copper alloys according to metal finisher's written instructions in a manner that leaves an undamaged and uniform finish matching approved Sample.
- C. Touchup Painting: Immediately after erection, clean field welds, bolted connections, and abraded areas of shop paint, and paint exposed areas with same material as used for shop painting to comply with SSPC-PA 1 for touching up shop-painted surfaces.
 - 1. Apply by brush or spray to provide a minimum 2.0-mil dry film thickness.
- D. Protect finishes of decorative metal from damage during construction period with temporary protective coverings approved by decorative metal fabricator. Remove protective covering at time of Substantial Completion.
- E. Restore finishes damaged during installation and construction period so no evidence remains of correction work. Return items that cannot be refinished in the field to the shop; make required alterations and refinish entire unit, or provide new units.

END OF SECTION

Gensler
006.3757.000

October 4th, 2021
Issue for Bid

**CUIMC - Interventional
Radiology**
Tarrytown, New York