DIVISION 5
METALS

SECTIONS:

5.1 COLD FORMED METAL FRAMING
5.2 MISCELLANEOUS METALS
5.3 WROUGHT IRON

SECTION 5.1 COLD FORMED METAL FRAMING

5.1 A General:

1. Standards –

   ASTM A 90-81 (91) – Standard Test Method for Weight of Coating on Zinc-Coated (galvanized) Iron or Steel Articles, 1981 (Reapproved 1991).

   ASTM A 446/A 446M-91 – Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) by the Hot-Dip Process, Structural (Physical) Quality, 1991.

   ASTM A 570/A 570M092 – Standard Specification for Steel, Sheet and Strip, Carbon, Hot-Rolled, Structural Quality, 1992.

   ASTM A 611-92 – Standard Specification for Steel, Sheet, Carbon, Cold-Rolled, Structural Quality, 1992.

   ASTM C 954-92A – Standard Specification for Steel Drill Screws for the Application of Gypsum Board of Metal Plaster Bases to Steel Studs from 0.033 inch (0.84 mm) to 0.112 inch (2.84 mm) in Thickness, 1992.

   ASTM C 1007-83(90) – Standard Specification for Installation of Load Bearing (Transverse and Axial) Steel Studs and Related Accessories, 1983 (Reapproved 1990).

   AWS D1.3-89 – Structural Welding Code – Sheet Steel American Welding Society, 1989.

   FS TT-P-645B – Primer, Paint, Zinc-Molybdate Alkyd Type, 1990.

2. Quality assurance –

   a. Welding: Qualify welding procedures and each welder in accordance with American Welding Society (AWS) D1.3, "Structural Welding Code – Sheet Steel."

   b. Framing Members Installed as Part of Fire-Resistance Rated Assemblies: Provide framing members approved by governing authorities.

3. Delivery, storage and handling –

a. Deliver, store, and handle products in a manner to prevent damage and deterioration, including rust.

b. Store materials above the ground in a dry area, in manufacturer's original packaging. Keep labels showing product type, name, and grade intact.

5.1 B Products:

1. Manufacturers – Provide products complying with requirements of the contract documents and made by one of the following:

   Alabama Metal Industries Corporation (AMICO)
   Dietrich Industries, Inc.
   Dale/Incor
   Gold Bond Building Products (Div. of National Gypsum)
   Marino Industries Corporation
   Unimast, Inc. (formerly a part of USG)

2. Cold formed metal framing –

   a. Fabricate metal framing units from ASTM A 446 steel sheet. Finish: Galvanized (zinc-coated), Class G60, minimum.

   b. C-Shaped Studs: Provide load-bearing studs fabricated from steel and sized as indicated; C-shaped in cross section, 1.625 inch flange, with flange return lip. Gauge: As indicated on drawings.

   c. Framing Accessories: Fabricate from minimum 16 gage steel sheet of the type and finish used for framing members. Provide manufacturer's standard configuration for the following items:

      1) Track channel.
      2) Deep-leg track channel.
      3) V-bridging.
      4) Cold-rolled channels, 1/2 inch depth.
      5) Vertical slide track.
      6) Clip angles.
      7) Flat strapping.
      8) Vertical slide clips.

3. Accessory materials –

   a. Welding Materials: Conform to requirements of AWS Code.

   b. Fasteners:

      1) Threaded fasteners: ASTM A 90, hot-dip galvanized.

2) Anchorage devices: Hot-dip galvanized steel or stainless steel. Acceptable types include powder-actuated fasteners and powder-driven anchor screws.

c. Touch-up Paint: FS TT-P-645, zinc-molybdate alkyd.

5.1 C Execution:

1. Examination –

a. Verify that project conditions and substrates are appropriate to installation of cold formed metal framing systems.

b. Verify that inserts, clips, and similar attachment devices installed as work of other sections are located and installed properly.

2. Installation – general

a. Comply with requirements of ASTM C 1007 except where exceeded by other requirements.

b. Install framing accessories such as web stiffeners, diagonal bracing, and bridging as indicated or required.

c. Masonry Relieving Angles: Obtain steel angles (specified elsewhere) and install in proper position.

d. Fastening: Join components by welding or by using screws or bolts, as recommended by framing component manufacturer for members to be joined. Clean welds, removing spatter and slag, and apply one coat of touch-up paint. Wire tying of framing elements is prohibited.

3. Stud wall framing –

a. Correctly position runner tracks at base and top of studs. Attach runner tracks to structure in accordance with manufacturer's recommendations for substrate and fastener type used. Use fasteners at all track terminations and corners.

b. Place studs at spacing indicated on drawings.

c. Corners and partition intersections of perimeter walls shall be so framed as to permit continuous insulation. There should be no uninsulated cavities behind framing.

d. Double stud at wall openings, door jambs, and window jambs.

e. Erect load-bearing studs one piece, full length. Splicing of studs not permitted. Brace and reinforce to develop full strength.

f. Where metal stud walls are constructed inside exterior masonry, top runners and corner studs that are to receive air sealing shall be braced sufficiently to prevent lateral movement from damaging air-sealing measures.

g. All top floor partitions, exterior walls, furring spaces and chaseways shall be sealed at ceiling level according to the provisions of section 7.10 to prevent air movement between wall cavities and roof cavity.

4. Tolerances – 1/4 inch maximum variance from True Position.

5. Thermal isolation of metal framing —

Metal framing members shall not form a continuous thermal conduction path between interior finish and either exterior surfaces of the building or cold air spaces. Party walls to adjacent unoccupied buildings shall be considered as exterior walls for the purposes of this section.

a. To permit compliance with insulation requirements of Sect. 7.2, maintain a 5-inch minimum clearance from interior stud flange to exterior masonry walls.

b. Top floor metal stud walls must terminate at ceiling level.

exception: Corner studs may enter roof cavity to provide lateral support for wall.

c. Metal studs and runners installed in the roof cavity must not be attached directly to any metal framing member to which the interior finish is fastened. Any such attachment must include a thermal break of 2x (minimum) lumber.

SECTION 5.2 MISCELLANEOUS METALS

5.2 A General:

1. All fabrications shall be in accordance with AISC Manual of Steel Construction,", and AISC "Specification for the Design, Fabrication, and Erection of Structural Steel for Buildings."

2. All Welding shall be in accordance with AWS "Code for Welding in Building Constructions."

5.2 B Products:

1. Rolled angle lintels, beams, plates and other structural shapes – ASTM 36
2. Pipe columns – ASTM A53
3. Anchors, fasteners, nuts, bolts – as required.
4. Grout – non-shrink commercial pre-packaged mix.

5. Shop Finish – Standard primer: SSPC Paint 13

5.2 C Execution:

1. Coordination with Other Work –

   a. At proper times, furnish and set in place miscellaneous metal items and accessories such as sleeves, anchors, inserts which are to be built into other work, or furnish such items to others for installation together with any necessary diagrams and templates.

   b. Cut, fit, drill an tap miscellaneous metal as required for installation or attachment of work.

   c. Drill and cut other work as necessary for installation of miscellaneous metal. Exercise care not to damage or mar any finishes.

2. Fabrication –

   a. Work shall be accurately fabricated in accordance with approved details. Edges shall be straight and true; angles, sharp; and surfaces smooth, free of scratches, pits and other blemishes. Curves where required shall be smoothly formed to required profiles without waves and buckles. Shearing and punching shall leave clean, true edges and surfaces.

   b. All work shall be neat and smooth and made strong, stiff and rigid. Joints shall be strong and secure. Exposed joints shall be accurate and close fitting.

   c. Fastenings shall be concealed where possible. Exposed welds shall be ground smooth. Exposed rivets, bolts, and screws shall be countersunk. Provide lock washers for all bolts.

3. Shop Finishes –

   a. After fabrication, miscellaneous iron and steel not specified to receive other shop finish shall be thoroughly cleaned and given a coat of first-quality zinc chromate or other approved rust-inhibitive primer. Apply only to dry surfaces and when air temperature is at least 50° F.

   b. Do not prime surfaces to be encased in concrete.

4. Installation –

   a. Install this work properly positioned, solid, secure, with verticals plumb, horizontal level, and free of damage and imperfections.

   b. Unless otherwise specified, anchors, fasteners and accessories for exterior use shall be non-ferrous or rustproofed metal fully compatible with metal with which used, and for

interior use shall be same metal with which used, and for interior use shall be same metal as item being fastened.

c. Use expansion bolts and anchors for attaching miscellaneous metals to concrete and solid masonry and toggle bolts for attaching to hollow masonry.

5. Rough Hardware – Provide all brackets, supports, sleeves, bearing plates, tie rods, anchor bolts, inserts and similar items not specified elsewhere.

6. Lintels – Steel angle lintels shall be employed at openings in face brick walls. Minimum flange thickness of any steel angle lintel shall be 5/16 inch. Where steel angle lintels are used for face brick, the back-up or interior lintel shall be steel angle or precast concrete masonry lintels. At openings up to 5 ft. feet clear span, angle lintels shall be no less than 3-1/2 inch x 3-1/2 inch x 5/16 inch angles.

SECTION 5.3 WROUGHT IRON

5.3 A General:

1. Designs of wrought iron fabrications to be according to conventional standards of the industry. Designs with the least unessential decorative embellishment are preferred. Provide product data displaying proposed design appearance of the wrought iron work for prior approval.

2. Wrought iron work shall be fabricated by specialty shop with minimum 5 year experience in wrought iron fabrication.

5.3 B Products:

1. Wrought Iron – actually mild steel – hot rolled rounds, bars, plates, low carbon, merchant quality, ASTM A575.

2. Welding materials – to suit metal to be welded and performed in accordance with AWS standards.

3. Shop and finish paint – primer and 2 finish coats factory applied lead free, rust inhibitive paint, finish color black unless otherwise indicated.

4. Fasteners, anchors, grout – to suit application.

5.3 C Execution:

1. Wrought iron shall be fabricated of standard shaped parts with standard roll formed top rail, minimum 1/2 inch x 1/2 inch balusters or spindles, minimum 1 inch x 3/8 inch bottom rail, minimum 1 inch x 1 inch starting posts, newel posts and column posts, and minimum 1/4 inch base plates where required with minimum 2 holes for anchorage at running supports and 4

holes for anchorage at starting posts and columns. Balusters at interior stair railings shall be vertical and spaced at 4 inch maximum, face to face.

2. Provide lambs tongue, rounded corners or turn down at top rail at free ends for safety.

3. Fabricate using full fillet and bevel welds as required, deburring and grinding all welds exposed in touch or sight.

4. All columns shall be "L" shaped in plan, sized by fabricator to support the intended maximum load both during erection and when fully and finally loaded.

5. Anchor wrought iron work by imbedding into concrete or masonry work, or by inserting into predrilled holes in masonry with non-shrink, non-staining grout. Depth of imbedment of posts shall be 4 inch minimum. Where imbedment is not possible, anchor plates to masonry and concrete surfaces with stainless steel or galvanized expansion bolts. Expansion bolts shall not be permitted closer than 3 inches to any edge of concrete or masonry materials. Anchor to wood members using square head lag screws of appropriate size and length. All railings and posts shall be mounted firmly and securely and shall provide sufficient strength to withstand loadings normal to the intended use.

6. Wrought iron work shall be fabricated and installed straight and true, in plane, plumb, and with proper rise or pitch as required by the mounting location. Handrails shall be continuous through a run or if spliced or welded, shall be ground smooth so that the joint is not perceptible by sight or touch.

7. Finish paint shall be a high-gloss enamel and field touch-up shall be provided where required to restore final finish.

8. Security grilles: Mount grilles using lugs welded to frame – 2 per side. Mount lugs by lagging to wood frame (beyond grille – interior side) or by embedment in masonry opening. Grille shall be fabricated of wrought iron strips and bars, welded construction, or 12 ga. wire fabric, 1-1/2 inch diamond mesh, engaged in 1 inch x 1/2-inch channel frame. Grilles shall be shop primed and finish coated with 2 coats of black oil base enamel paint. All grilles are to be hinged, and operable with interior-mounted latch which permits unobstructed egress.