SECTION 05.12.00
STRUCTURAL STEEL FRAMING

PART 1 GENERAL

1.01 SECTION INCLUDES
A. Structural steel framing members, support members, sag rods, and struts.
B. Base plates, shear stud connectors and expansion joint plates.
C. Grouting under base plates.

1.02 RELATED REQUIREMENTS
A. Section 05.21.00 - Steel Joist Framing.
B. Section 05.31.00 - Steel Decking: Support framing for small openings in deck.
C. Section 05.50.00 - Metal Fabrications: Steel fabrications affecting structural steel work.
D. Section 07.81.00 - Applied Fireproofing: Fireproof protection to framing and metal deck systems.

1.03 REFERENCE STANDARDS
K. ASTM A325M - Standard Specification for Structural Bolts, Steel, Heat Treated 830 MPa Minimum Tensile Strength (Metric); 2014.
L. ASTM A500/A500M - Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes; 2013.
AE. AWS A2.4 - Standard Symbols for Welding, Brazing, and Nondestructive Examination; American Welding Society; 2012.
AF. AWS D1.1/D1.1M - Structural Welding Code - Steel; American Welding Society; 2011 w/Errata.
AH. RCSC (HSBOLT) - Specification for Structural Joints Using High-Strength Bolts; Research Council on Structural Connections; 2009.

1.04 SUBMITTALS
A. See Section 01.30.00 - Administrative Requirements, for submittal procedures.
B. Shop Drawings:
   1. Indicate profiles, sizes, spacing, locations of structural members, openings, attachments, and fasteners.
   2. Connections not detailed.
   3. Indicate welded connections with AWS A2.4 welding symbols. Indicate net weld lengths.
C. Manufacturer's Mill Certificate: Certify that products meet or exceed specified requirements.
D. Mill Test Reports: Indicate structural strength, destructive test analysis and non-destructive test analysis.
E. Fabricator Test Reports: Comply with ASTM A1011/A1011M.
F. Welders Certificates: Certify welders employed on the Work, verifying AWS qualification within the previous 12 months.
G. Fabricator's Qualification Statement: Provide documentation showing steel fabricator is accredited under IAS AC172.

1.05 QUALITY ASSURANCE

A. Fabricate structural steel members in accordance with AISC "Steel Construction Manual."
B. Comply with Section 10 of AISC "Code of Standard Practice for Steel Buildings and Bridges" for architecturally exposed structural steel.
C. Fabricator: Company specializing in performing the work of this section with minimum 10 years of documented experience.
D. Fabricator Qualifications: A qualified steel fabricator that is accredited by the International Accreditation Service (IAS) Fabricator Inspection Program for Structural Steel (AC172).
E. Erector: Company specializing in performing the work of this section with minimum 5 years of documented experience.
F. Design connections not detailed on the drawings under direct supervision of a Professional Structural Engineer experienced in design of this work and licensed in Tennessee.

PART 2 PRODUCTS

2.01 MATERIALS

A. Steel Angles and Plates: ASTM A36/A36M.
B. Steel W Shapes and Tees: ASTM A992/A992M.
C. Rolled Steel Structural Shapes: ASTM A992/A992M.
D. Steel Shapes, Plates, and Bars: ASTM A242/A242M high-strength, corrosion-resistant structural steel.
E. Steel Plates and Bars: ASTM A572/A572M, Grade 50 (345) high-strength, columbium-vanadium steel.
F. Cold-Formed Structural Tubing: ASTM A500/A500M, Grade B.
G. Hot-Formed Structural Tubing: ASTM A501/A501M, seamless or welded.
H. Steel Plate: ASTM A514/A514M.
I. Steel Sheet: ASTM A1011/A1011M, Designation SS, Grade 30 hot-rolled, or ASTM A1008/A1008M, Designation SS, Grade 30 cold-rolled.
K. Shear Stud Connectors: Made from ASTM A108 Grade 1015 bars.
L. Sag Rods: ASTM A36/A36M.
M. Structural Bolts and Nuts: Carbon steel, ASTM A307, Grade A galvanized to ASTM A153/A153M, Class C.
N. High-Strength Structural Bolts, Nuts, and Washers: ASTM A325 or A325M, Type 1, medium carbon, galvanized, with matching compatible ASTM A563 or A563M nuts and ASTM F436 washers.
O. Tension Control Bolts: Twist-off type; ASTM F1852 or ASTM F2280.
P. Headed Anchor Rods: ASTM F1554, Grade 36, plain, with matching ASTM A563 or A563M nuts and ASTM F436 Type 1 washers.
Q. Load Indicator Washers: Provide washers complying with ASTM F959 at all connections requiring high-strength bolts.
R. Welding Materials: AWS D1.1/D1.1M; type required for materials being welded.
S. Sliding Bearing Plates: Teflon coated.
T. Grout: Non-shrink, non-metallic aggregate type, complying with ASTM C1107/C1107M and capable of developing a minimum compressive strength of 7,000 psi at 28 days.

U. Shop and Touch-Up Primer: Fabricator's standard, complying with VOC limitations of authorities having jurisdiction.

V. Touch-Up Primer for Galvanized Surfaces: Fabricator's standard, complying with VOC limitations of authorities having jurisdiction.

2.02 FABRICATION

A. Shop fabricate to greatest extent possible.

B. Continuously seal joined members by continuous welds. Grind exposed welds smooth.

C. Fabricate connections for bolt, nut, and washer connectors.

D. Develop required camber for members.

2.03 FINISH

A. Prepare structural component surfaces in accordance with SSPC SP 2.

B. Shop prime structural steel members. Do not prime surfaces that will be fireproofed, field welded, in contact with concrete, or high strength bolted.

C. Galvanize structural steel members exposed to the elements to comply with ASTM A123/A123M. Provide minimum 1.7 oz/sq ft galvanized coating.

2.04 SOURCE QUALITY CONTROL

A. Provide shop testing and analysis of structural steel.

B. High-Strength Bolts: Provide testing and verification of shop-bolted connections in accordance with RCSC "Specification for Structural Joints Using High-Strength Bolts", testing at least 10 percent of bolts at each connection.

C. Welded Connections: Visually inspect all shop-welded connections and test at least 10 percent of CJP welds using one of the following:
   1. Radiographic testing performed in accordance with ASTM E94.
   2. Ultrasonic testing performed in accordance with ASTM E164.
   3. Liquid penetrant inspection performed in accordance with ASTM E165/E165M.
   4. Magnetic particle inspection performed in accordance with ASTM E709.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that conditions are appropriate for erection of structural steel and that the work may properly proceed.

3.02 ERECTION

A. Erect structural steel in compliance with AISC "Code of Standard Practice for Steel Buildings and Bridges".

B. Allow for erection loads, and provide sufficient temporary bracing to maintain structure in safe condition, plumb, and in true alignment until completion of erection and installation of permanent bracing.

C. Field weld components and shear studs indicated on shop drawings.

D. Use carbon steel bolts only for temporary bracing during construction, unless otherwise specifically permitted on drawings. Install high-strength bolts in accordance with RCSC "Specification for Structural Joints Using High-Strength Bolts".
E. Do not field cut or alter structural members without approval of Architect.

F. After erection, prime welds, abrasions, and surfaces not shop primed, except surfaces to be in contact with concrete.

G. Grout solidly between column plates and bearing surfaces, complying with manufacturer's instructions for nonshrink grout. Trowel grouted surfaces smooth, splaying neatly to 45 degrees.

3.03 TOLERANCES

A. Maximum Variation From Plumb: 1/4 inch per story, non-cumulative.

B. Maximum Offset From True Alignment: 1/4 inch.

3.04 FIELD QUALITY CONTROL

A. An independent testing agency will perform field quality control tests, as specified in Section 01.43.25.

B. High-Strength Bolts: Provide testing and verification of field-bolted connections in accordance with RCSC "Specification for Structural Joints Using High-Strength Bolts", testing at least 10 percent of bolts at each connection.

C. Welded Connections: Visually inspect all field-welded connections and test at least 10 percent of welds using one of the following:
   1. Ultrasonic testing performed in accordance with ASTM E164.
   2. Liquid penetrant inspection performed in accordance with ASTM E165/E165M.

END OF SECTION
SECTION 05.40.00
COLD-FORMED METAL FRAMING

PART 1  GENERAL

1.01  SECTION INCLUDES
   A. Formed steel stud exterior wall and interior wall framing.
   B. Exterior wall sheathing.
   C. Water-resistive barrier over sheathing.

1.02  RELATED REQUIREMENTS
   A. Section 05.31.00 - Steel Decking.
   B. Section 07.25.00 - Weather Barriers: Weather barrier over sheathing.
   C. Section 07.92.00 - Joint Sealants.
   D. Section 09.21.16 - Gypsum Board Assemblies: Lightweight, non-load bearing metal stud framing.

1.03  REFERENCE STANDARDS
   A. AISI S100-12 - North American Specification for the Design of Cold-Formed Steel Structural Members; American Iron and Steel Institute; 2012.
   E. ASTM C955 - Standard Specification for Load-Bearing (Transverse and Axial) Steel Studs, Runners (Tracks), and Bracing or Bridging for Screw Application of Gypsum Panel Products and Metal Plaster Bases; 2011c.

1.04  SUBMITTALS
   A. See Section 01.30.00 - Administrative Requirements, for submittal procedures.
   B. Product Data: Provide data on standard framing members; describe materials and finish, product criteria, limitations.
   C. Product Data: Provide manufacturer's data on factory-made framing connectors, showing compliance with requirements.
   D. Shop Drawings: Indicate component details, framed openings, bearing, anchorage, loading, welds, and type and location of fasteners, and accessories or items required of related work.
      1. Indicate stud layout.
      2. Describe method for securing studs to tracks and for bolted framing connections.
      3. Provide design engineer's stamp on shop drawings.
E. Manufacturer's Installation Instructions: Indicate special procedures, conditions requiring special attention.

1.05 QUALITY ASSURANCE
A. Designer Qualifications: Design framing system under direct supervision of a Professional Structural Engineer experienced in design of this Work and licensed in Tennessee.
B. Manufacturer Qualifications: Company specializing in manufacturing the types of products specified in this section, and with minimum three years of documented experience.
C. Installer Qualifications: Company specializing in performing the work of this section with minimum three years documented experience and approved by manufacturer.

1.06 MOCK-UP
A. Provide mock-up of exterior framed wall, including components specified elsewhere, such as insulation, sheathing, window frame, door frame, exterior wall finish, and interior wall finish.
B. Mock-Up Size: As indicated on the drawings.
C. Location: As directed.

PART 2 PRODUCTS

2.01 FRAMING SYSTEM
A. Provide primary and secondary framing members, bridging, bracing, plates, gussets, clips, fittings, reinforcement, and fastenings as required to provide a complete framing system.
B. Design Criteria: Provide completed framing system having the following characteristics:
   1. Design: Calculate structural characteristics of cold-formed steel framing members according to AISI S100-12.
   2. Structural Performance: Design, engineer, fabricate, and erect to withstand specified design loads for project conditions within required limits.
   3. Design Loads: In accordance with applicable codes.
   4. Live load deflection meeting the following, unless otherwise indicated:
      b. Roofs: Maximum vertical deflection under live load of 1/240 of span.
      c. Exterior Walls: Maximum horizontal deflection under wind load of 1/180 of span.
      d. Design non-axial loadbearing framing to accommodate not less than 1/2 in vertical deflection.
   5. Able to tolerate movement of components without damage, failure of joint seals, undue stress on fasteners, or other detrimental effects when subject to seasonal or cyclic day/night temperature ranges.
   6. Able to accommodate construction tolerances, deflection of building structural members, and clearances of intended openings.
C. Shop fabricate framing system to the greatest extent possible.
D. Deliver to site in largest practical sections.

2.02 FRAMING MATERIALS
A. Studs and Track: ASTM C955; studs formed to channel, "C", or "Sigma" shape with punched web; U-shaped track in matching nominal width and compatible height.
   1. Gage and Depth: As indicated on the drawings.
   2. Galvanized in accordance with ASTM A653/A653M, G90/Z275 coating.
   3. Provide components fabricated from ASTM A1011/A1011M, Designation SS steel.
B. Framing Connectors: Factory-made, formed steel sheet.
1. Material: ASTM A653/A653M SS Grade 33 and 40 (minimum), with G90/Z275 hot dipped galvanized coating for base metal thickness less than 10 gage, 0.1345 inch, and factory punched holes and slots.

2. Structural Performance: Maintain load and movement capacity required by applicable code, when evaluated in accordance with AISI S100-12.

3. Movement Connections: Provide mechanical anchorage devices that accommodate movement using slotted holes, shouldered screws or screws and anti-friction or stepped bushings, while maintaining structural performance of framing. Provide movement connections where indicated on drawings.
   a. Where continuous studs bypass elevated floor slab, connect stud to slab in manner allowing vertical and horizontal movement of slab without affecting studs; allow for minimum movement of 1/2 inch.
   b. Where top of stud wall terminates below structural floor or roof, connect studs to structure in manner allowing vertical and horizontal movement of slab without affecting studs; allow for minimum movement of 1/2 inch.
   c. Provide top track with long leg track and head of wall movement connectors; minimum track length of 12 feet.


5. Wall Stud Bridging Connections: Provide mechanical load-transferring devices that accommodate wind load torsion and weak axis buckling induced by axial compression loads. Provide bridging connections where indicated on the drawings.

### 2.03 WALL SHEATHING
A. Wall Sheathing: Polyisocyanurate foam board; ASTM C1289, Class 1 Nonreinforced; aluminum foil both faces.

### 2.04 ACCESSORIES
A. Bracing, Furring, Bridging: Formed sheet steel, thickness determined for conditions encountered; finish to match framing components.
B. Touch-Up Primer for Galvanized Surfaces: SSPC-Paint 20, Type I - Inorganic, complying with VOC limitations of authorities having jurisdiction.
C. Water-Resistive Barrier: As specified in Section 07.25.00.

### 2.05 FASTENERS
A. Self-Drilling, Self-Tapping Screws, Bolts, Nuts and Washers: Hot dip galvanized per ASTM A153/A153M.
B. Anchorage Devices: Powder actuated and Screws with sleeves.

### PART 3 EXECUTION

#### 3.01 EXAMINATION
A. Verify that substrate surfaces are ready to receive work.
B. Verify field measurements and adjust installation as required.

#### 3.02 INSTALLATION OF STUDS
A. Install components in accordance with manufacturers' instructions and ASTM C1007 requirements.
B. Align floor and ceiling tracks; locate to wall layout. Secure in place with fasteners at maximum 24 inches on center. Coordinate installation of sealant with floor and ceiling tracks.
C. Place studs at 16 inches on center; not more than 2 inches from abutting walls and at each side of openings. Connect studs to tracks using clip and tie method.

D. Construct corners using minimum of three studs. Install double studs at wall openings, door and window jambs.

E. Install load bearing studs full length in one piece. Splicing of studs is not permitted.

F. Install load bearing studs, brace, and reinforce to develop full strength and achieve design requirements.

G. Coordinate placement of insulation in multiple stud spaces made inaccessible after erection.

H. Install intermediate studs above and below openings to align with wall stud spacing.

I. Provide deflection allowance in stud track, directly below horizontal building framing at non-load bearing framing.

J. Attach cross studs to studs for attachment of fixtures anchored to walls.

K. Install framing between studs for attachment of mechanical and electrical items, and to prevent stud rotation.

L. Touch-up field welds and damaged galvanized surfaces with primer.

3.03 WALL SHEATHING

A. Wall Sheathing: Secure with long dimension perpendicular to wall studs, with ends over firm bearing and staggered, using self-tapping screws.

1. Place water-resistant barrier horizontally over wall sheathing, weather lapping edges and ends.
PART 1 GENERAL

1.01 SECTION INCLUDES
   A. Shop fabricated steel items.

1.02 RELATED REQUIREMENTS
   A. Section 03.30.00 - Cast-in-Place Concrete: Placement of metal fabrications in concrete.
   B. Section 05.12.00 - Structural Steel Framing: Structural steel column anchor bolts.
   C. Section 05.52.13 - Pipe and Tube Railings.
   D. Section 09.91.13 - EXTERIOR PAINTING: Paint finish.
   E. Section 09.91.23 - Interior Painting: Paint finish.

1.03 REFERENCE STANDARDS
   F. ASTM A500/A500M - Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes; 2013.
   H. AWS D1.1/D1.1M - Structural Welding Code - Steel; American Welding Society; 2011 w/Errata.
   J. SSPC-Paint 15 - Steel Joist Shop Primer; Society for Protective Coatings; 1999 (Ed. 2004).
   L. SSPC-SP 2 - Hand Tool Cleaning; Society for Protective Coatings; 1982 (Ed. 2004).

1.04 SUBMITTALS
   A. See Section 01.30.00 - Administrative Requirements, for submittal procedures.
   B. Shop Drawings: Indicate profiles, sizes, connection attachments, reinforcing, anchorage, size and type of fasteners, and accessories. Include erection drawings, elevations, and details where applicable.
   C. Welders' Certificates: Submit certification for welders employed on the project, verifying AWS qualification within the previous 12 months.
D. Fabricator's Qualification Statement: Provide documentation showing steel fabricator is accredited under IAS AC172.

1.05 QUALITY ASSURANCE
A. Design ________ under direct supervision of a Professional Structural __________ Engineer experienced in design of this Work and licensed in Tennessee.
B. Fabricator Qualifications: A qualified steel fabricator that is accredited by the International Accreditation Service (IAS) Fabricator Inspection Program for Structural Steel (AC172).

PART 2 PRODUCTS

2.01 MATERIALS - STEEL
A. Steel Sections: ASTM A36/A36M.
B. Steel Tubing: ASTM A500/A500M, Grade B cold-formed structural tubing.
C. Plates: ASTM A283.
D. Pipe: ASTM A53/A53M, Grade B Schedule 40, black and hot-dip galvanized finish, as indicated.
E. Bolts, Nuts, and Washers: ASTM A325 (ASTM A325M), Type 1, galvanized to ASTM A153/A153M where connecting galvanized components.
F. Welding Materials: AWS D1.1/D1.1M; type required for materials being welded.
G. Shop and Touch-Up Primer: SSPC-Paint 15, complying with VOC limitations of authorities having jurisdiction.
H. Touch-Up Primer for Galvanized Surfaces: SSPC-Paint 20, Type I - Inorganic, complying with VOC limitations of authorities having jurisdiction.

2.02 FABRICATION
A. Fit and shop assemble items in largest practical sections, for delivery to site.
B. Fabricate items with joints tightly fitted and secured.
C. Continuously seal joined members by continuous welds.
D. Grind exposed joints flush and smooth with adjacent finish surface. Make exposed joints butt tight, flush, and hairline. Ease exposed edges to small uniform radius.
E. Exposed Mechanical Fastenings: Flush countersunk screws or bolts; unobtrusively located; consistent with design of component, except where specifically noted otherwise.
F. Supply components required for anchorage of fabrications. Fabricate anchors and related components of same material and finish as fabrication, except where specifically noted otherwise.

2.03 FABRICATED ITEMS
A. Bollards: Steel pipe, concrete filled, crowned cap, as detailed; prime paint finish.
B. Door Frames for Overhead Door Openings and Wall Openings: Channel sections; prime paint finish.

2.04 FINISHES - STEEL
A. Prime paint steel items.
   1. Exceptions: Galvanize items to be embedded in concrete and items to be imbedded in masonry.
   2. Exceptions: Do not prime surfaces in direct contact with concrete, where field welding is required, and items to be covered with sprayed fireproofing.
B. Prepare surfaces to be primed in accordance with SSPC-SP2.
C. Clean surfaces of rust, scale, grease, and foreign matter prior to finishing.
D. Prime Painting: One coat.
E. Galvanizing of Structural Steel Members: Galvanize after fabrication to ASTM A123/A123M requirements.
F. Galvanizing of Non-structural Items: Galvanize after fabrication to ASTM A123/A123M requirements.

2.05 FABRICATION TOLERANCES
A. Squareness: 1/8 inch maximum difference in diagonal measurements.
B. Maximum Offset Between Faces: 1/16 inch.
C. Maximum Misalignment of Adjacent Members: 1/16 inch.
D. Maximum Bow: 1/8 inch in 48 inches.
E. Maximum Deviation From Plane: 1/16 inch in 48 inches.

PART 3 EXECUTION

3.01 EXAMINATION
A. Verify that field conditions are acceptable and are ready to receive work.

3.02 PREPARATION
A. Clean and strip primed steel items to bare metal where site welding is required.
B. Supply setting templates to the appropriate entities for steel items required to be cast into concrete or embedded in masonry.

3.03 INSTALLATION
A. Install items plumb and level, accurately fitted, free from distortion or defects.
B. Provide for erection loads, and for sufficient temporary bracing to maintain true alignment until completion of erection and installation of permanent attachments.
C. Perform field welding in accordance with AWS D1.1/D1.1M.
D. Obtain approval prior to site cutting or making adjustments not scheduled.
E. After erection, prime welds, abrasions, and surfaces not shop primed or galvanized, except surfaces to be in contact with concrete.

3.04 TOLERANCES
A. Maximum Variation From Plumb: 1/4 inch per story, non-cumulative.
B. Maximum Offset From True Alignment: 1/4 inch.

END OF SECTION
PART 1 GENERAL

1.01 SECTION INCLUDES
   A. Wall mounted handrails and guardrails.

1.02 RELATED REQUIREMENTS
   A. Section 03.30.00 - Cast-in-Place Concrete: Placement of anchors in concrete.
   B. Section 09.21.16 - Gypsum Board Assemblies: Placement of backing plates in stud wall construction.
   C. Section 09.91.13 - EXTERIOR PAINTING: Paint finish.
   D. Section 09.91.23 - Interior Painting: Paint finish.

1.03 REFERENCE STANDARDS
   D. ASTM A500/A500M - Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes; 2013.

1.04 SUBMITTALS
   A. See Section 01.30.00 - Administrative Requirements, for submittal procedures.
   B. Shop Drawings: Indicate profiles, sizes, connection attachments, anchorage, size and type of fasteners, and accessories.
   C. Samples: Submit two, 6 inch long samples of handrail. Submit two samples of elbow, wall bracket, and end stop.

PART 2 PRODUCTS

2.01 RAILINGS - GENERAL REQUIREMENTS
   A. Design, fabricate, and test railing assemblies in accordance with the most stringent requirements of ASTM E985 and applicable local code.
   B. Distributed Loads: Design railing assembly, wall rails, and attachments to resist distributed force of 75 pounds per linear foot applied to the top of the assembly and in any direction, without damage or permanent set. Test in accordance with ASTM E935.
C.  Concentrated Loads: Design railing assembly, wall rails, and attachments to resist a concentrated force of 200 pounds applied at any point on the top of the assembly and in any direction, without damage or permanent set. Test in accordance with ASTM E935.

D.  Allow for expansion and contraction of members and building movement without damage to connections or members.

E.  Dimensions: See drawings for configurations and heights.

F.  Provide anchors and other components as required to attach to structure, made of same materials as railing components unless otherwise indicated; where exposed fasteners are unavoidable provide flush countersunk fasteners.
   1.  For anchorage to concrete, provide inserts to be cast into concrete, for welding anchors.
   2.  For anchorage to masonry, provide brackets to be embedded in masonry, for bolting anchors.
   3.  For anchorage to stud walls, provide backing plates, for bolting anchors.

G.  Provide welding fittings to join lengths, seal open ends, and conceal exposed mounting bolts and nuts, including but not limited to elbows, T-shapes, splice connectors, flanges, escutcheons, and wall brackets.

2.02  STEEL RAILING SYSTEM

A.  Steel Tube: ASTM A500/A500M, Grade B cold-formed structural tubing.

B.  Steel Pipe: ASTM A53/A53M, Grade B Schedule 40, black finish.

C.  Welding Fittings: Factory- or shop-welded from matching pipe or tube; seams continuously welded; joints and seams ground smooth.

D.  Galvanizing: In accordance with requirements of ASTM A123/A123M.
   1.  Touch-Up Primer for Galvanized Surfaces: SSPC-Paint 20, Type I - Inorganic.

E.  Shop and Touch-Up Primer: SSPC-Paint 15, complying with VOC limitations of authorities having jurisdiction.

2.03  FABRICATION

A.  Accurately form components to suit specific project conditions and for proper connection to building structure.

B.  Fit and shop assemble components in largest practical sizes for delivery to site.

C.  Fabricate components with joints tightly fitted and secured. Provide spigots and sleeves to accommodate site assembly and installation.

D.  Welded Joints:
   1.  Exterior Components: Continuously seal joined pieces by continuous welds. Drill condensate drainage holes at bottom of members at locations that will not encourage water intrusion.
   2.  Interior Components: Continuously seal joined pieces by continuous welds.
   3.  Grind exposed joints flush and smooth with adjacent finish surface. Make exposed joints butt tight, flush, and hairline. Ease exposed edges to small uniform radius.

PART 3 EXECUTION

3.01  EXAMINATION

A.  Verify that field conditions are acceptable and are ready to receive work.

3.02  PREPARATION

A.  Clean and strip primed steel items to bare metal where site welding is required.
B. Supply items required to be cast into concrete or embedded in masonry with setting templates, for installation as work of other sections.

3.03 INSTALLATION

A. Install in accordance with manufacturer's instructions.
B. Install components plumb and level, accurately fitted, free from distortion or defects, with tight joints.
C. Install railings in compliance with ADA Standards for accessible design at applicable locations.
D. Anchor railings securely to structure.
E. Field weld anchors as indicated on shop drawings. Touch-up welds with primer. Grind welds smooth.
F. Conceal anchor bolts and screws whenever possible. Where not concealed, use flush countersunk fastenings.

3.04 TOLERANCES

A. Maximum Variation From Plumb: 1/4 inch per floor level, non-cumulative.
B. Maximum Offset From True Alignment: 1/4 inch.

END OF SECTION