

SECTION 05120

STRUCTURAL STEEL FRAMING

PART 1 – GENERAL

1.01 SECTION INCLUDES

- A. Structural steel framing members, and support members.
- B. Base plates.
- C. Grouting under base plates.

1.02 REFERENCES

- A. AISC (AMAN) - ASD Manual of Steel Construction; American Institute of Steel Construction, Inc.; 1989, Ninth Edition.
- B. AISC S303 - Code of Standard Practice for Steel Buildings and Bridges; American Institute of Steel Construction, Inc.; 2005.
- C. AISC S348 - Specification for Structural Joints Using ASTM A325 or A490 Bolts; 2004.
- D. ASTM A 36/A 36M - Standard Specification for Carbon Structural Steel; 2005.
- E. ASTM A 53/A 53M - Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless; 2004a.
- F. ASTM A 108 - Standard Specification for Steel Bar, Carbon and Alloy, Cold Finished; 2003.
- G. ASTM A 123/A 123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products; 2002.
- H. ASTM A 307 - Standard Specification for Carbon Steel Bolts and Studs, 60 000 PSI Tensile Strength; 2004.
- I. ASTM A 325 - Standard Specification for Structural Bolts, Steel, Heat Treated, 120/105 ksi Minimum Tensile Strength; 2004b.
- J. ASTM A 325M - Standard Specification for Structural Bolts, Steel, Heat Treated 830 MPa Tensile Strength (Metric); 2004b.
- K. ASTM A 490 - Standard Specification for Structural Bolts, Alloy Steel, Heat-Treated, 150 ksi Minimum Tensile Strength; 2004a.
- L. ASTM A 490M - Standard Specification for High-Strength Steel Bolts, Classes 10.9 and 10.9.3, for Structural Steel Joints (Metric); 2004a.
- M. ASTM A 500 - Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes; 2003a.
- N. ASTM A 501 - Standard Specification for Hot-Formed Welded and Seamless Carbon Steel Structural Tubing; 2001.
- O. ASTM A 992/A 992M - Standard Specification for Structural Steel Shapes; 2004a.
- P. ASTM C 1107 - Standard Specification for Packaged Dry, Hydraulic-Cement Grout (Nonshrink); 2002.

- Q. ASTM E 164 - Standard Practice for Ultrasonic Contact Examination of Weldments; 2003.
- R. ASTM F 959 - Standard Specification for Compressible-Washer-Type Direct Tension Indicators for Use with Structural Fasteners; 2005.
- S. AWS A2.4 - Standard Symbols for Welding, Brazing, and Nondestructive Examination; American Welding Society; 1998.
- T. AWS D1.1/D1.1M - Structural Welding Code - Steel; American Welding Society; 2004 and errata.
- U. SSPC-Paint 20 - Zinc-Rich Primers (Type I, "Inorganic," and Type II, "Organic"); Society for Protective Coatings; 2002.

### 1.03 SUBMITTALS

- A. See Architect 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 cambers and loads.
  - 4. Indicate welded connections with AWS A2.4 welding symbols. Indicate net weld lengths.
  - 5. Include embedment drawings.
  - 6. Indicate type, size, and length of bolts, distinguishing between shop and field bolts. Identify pre-tensioned and slip-critical high-strength bolted connections.
  - 7. Reproduction of contract drawings, in any form, will not be accepted as shop drawings.
- C. Manufacturer's Mill Certificate: Certify that products meet or exceed specified requirements.
  - 1. Structural steel including chemical and physical properties.
  - 2. Bolts, nuts, and washers including mechanical properties and chemical analysis.
  - 3. Shear stud connectors.
  - 4. Shop primers.
- D. Mill Test Reports: Indicate structural strength, destructive test analysis and non-destructive test analysis.
- E. Welders Certificates: Certify welders employed on the Work, verifying AWS qualification within the previous 12 months.

### 1.04 QUALITY ASSURANCE

- A. Fabricate structural steel members in accordance with AISC "ASD Manual of Steel Construction".
- B. Comply with Section 10 of AISC "Code of Standard Practice for Steel Buildings and Bridges" for architecturally exposed structural steel.
  - 1. AISC "Seismic Provisions for Structural Steel Buildings" and supplements.
- C. AISC "Specification for Structural Steel Buildings-Allowable Stress Design and Plastic Design".
- D. RCSC's "Specification for Structural Joints using ASTM A 325 or A490 Bolts".
- E. Fabricator: Company specializing in performing the work of this section with minimum three years of documented experience.
- F. Erector: Company specializing in performing the work of this section with minimum three years of documented experience.

## 1.05 DELIVERY, STORAGE, AND HANDLING

- A. Store materials to permit easy access for inspection and identification. Keep steel members off ground and spaced by using pallets, dunnage, or other supports and spacers. Protect steel members and packaged materials from erosion and deterioration.
  - 1. Store fasteners in a protected place. Clean and relubricate bolts and nuts that become dry or rusty before use.
  - 2. Do not store materials on structure in a manner that might cause distortion, damage, or overload to members or supporting structures. Repair or replace damaged materials or structures as directed.

## 1.06 COORDINATION

- A. Furnish anchorage items to be embedded in or attached to other construction without delaying the Work. Provide setting diagrams, sheet metal templates, instructions, and directions for installation.

## PART 2 – PRODUCTS

### 2.01 MATERIALS

- A. Steel Angles and Plates: ASTM A 36/A 36M.
- B. Steel W Shapes and Tees: ASTM A 992/A 992M.
- C. Rolled Steel Structural Shapes: ASTM A 992/A 992M.
- D. Steel Shapes, Plates, and Bars: ASTM A 242/A 242M high-strength, corrosion-resistant structural steel.
- E. Steel Plates and Bars: ASTM A 572/A 572M, Grade 50 (345) high-strength, columbium-vanadium steel.
- F. Cold-Formed Structural Tubing: ASTM A 500, Grade B.
- G. Hot-Formed Structural Tubing: ASTM A 501, seamless or welded.
- H. Steel Bars: ASTM A 108.
- I. Steel Plate: ASTM A 514/A 514M.
- J. Steel Sheet: ASTM A 1011/A 1011M, Designation SS, Grade 30 hot-rolled, or ASTM A 1008/A 1008M, Designation SS, Grade 30 cold-rolled.
- K. Pipe: ASTM A 53/A 53M, Grade B, Finish black.
- L. Shear Stud Connectors: Made from ASTM A 108 Grade 1015 bars.
  - 1. AWS D1.1, Type B.
- M. Sag Rods: ASTM A 36/A 36M.
- N. Carbon Steel Bolts and Nuts: ASTM A 307, Grade A galvanized to ASTM A 153/A 153M, Class C.
- O. High-Strength Bolts, Nuts, and Washers: ASTM A 325 (ASTM A 325M), Type 1, medium carbon, galvanized.
- P. High-Strength Structural Bolts: ASTM A 490 (ASTM A 490M), with matching ASTM A 563 (ASTM A 563M) nuts and ASTM F 436 washers; Type 1 alloy steel.
- Q. Anchor Bolts: ASTM F1554, Grade 36.
- R. High-Strength Anchor Bolts: ASTM A 325, Type 1 medium carbon, plain.
- S. Load Indicator Washers: Provide washers complying with ASTM F 959 at all connections requiring high-strength bolts.
- T. Welding Materials: AWS D1.1; type required for materials being welded.
- U. Grout: Non-shrink, non-metallic aggregate type, complying with ASTM C 1107 and capable of developing a minimum compressive strength of 7,000 psi at 28 days. Provide "100 Non-Shrink Grout" manufactured by Conspec.

- V. Shop and Touch-Up Primer: Fabricator's standard, complying with VOC limitations of authorities having jurisdiction.
  - 1. Lead free alkyd primer; Tnemec 10-99 Series, Southern Coatings Environ-Guard 1-2900, or approved equal, meeting performance requirements of TT-P-86, Type I and passing ASTM B 117 after 500 hours with no blistering, cracking, softening, delamination, or rust creepage at scribe and rusting at edges.
- W. 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. Space shear stud connectors as shown on drawings.
- C. Continuously seal joined members by continuous welds. Grind exposed welds smooth.
- D. Fabricate connections for bolt, nut, and washer connectors.
- E. Develop required camber for members.

## 2.03 FINISH

- A. Prepare structural component surfaces in accordance with SSPC SP -2 and SP-3.
- B. Shop prime structural steel members. Do not prime surfaces that will be fireproofed, field welded, or in contact with concrete, high strength bolted, or field installed headed studs.
  - 1. Dry film thickness of not less than 2 mils.
- C. Galvanize structural steel members to comply with ASTM A 123/A 123M. Provide minimum 1.7 oz/sq ft galvanized coating.

## 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 AISC "Specification for Structural Joints Using ASTM A325 or A490 Bolts".
- E. Do not field cut or alter structural members without approval of.
- 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 non-shrink grout. Trowel grouted surfaces smooth, splaying neatly to 45 degrees.

END OF SECTION

SECTION 05310

STEEL DECK

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Roof deck.
- B. Composite floor deck.
- C. Supplementary framing for openings up to and including 18 inches.
- D. Bearing plates and angles.
- E. Stud shear connectors.

1.02 REFERENCE STANDARDS

- A. ASTM A 36/A 36M – Standard Specification for Carbon Structural Steel; 2008.
- B. ASTM A 108 – Standard Specification for Steel Bar, Carbon and Alloy, Cold Finished; 2007.
- C. ASTM A 1008/A 1008M – Standard Specification for Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength, Low Alloy and High-Strength Low-Alloy with Improved Formability, Solution Hardened, and Bake Hardened; 2010.
- D. AWS D1.1/D1.1M – Structural Welding Code – Steel; American Welding Society, 2010.
- E. AWS D1.3 – Structural Welding Code – Sheet Steel; American Welding Society, 2008.
- F. SDI (DM) – Publication No. 31, Design Manual for Composite Decks, Form Decks, Roof Decks; Steel Deck Institute; 2007.
- G. SSPC-Paint 25 – Zinc Oxide, Alkyd, Linseed Oil Primer for Use Over Hand Cleaned Steel, Type I and Type II; Society for Protective Coatings; 1997 (Ed. 2004).

1.03 PERFORMANCE REQUIREMENTS

- A. Refer to structural drawings for notes and details by structural engineer regarding Performance Requirements.

1.04 SUBMITTALS

- A. See administrative requirements given by the architect for submittal procedures.
- B. Shop Drawings: Indicate deck plan, support locations, projections, openings, reinforcement, cellular raceways and outlet box locations, pertinent details, and accessories.
- C. Product Data: Provide deck profile characteristics, dimensions, structural properties, and finishes.

## 1.05 DELIVERY, STORAGE, AND HANDLING

- A. Cut plastic wrap to encourage ventilation.
- B. Store deck on dry wood sleepers; slope for positive drainage.

## PART 2 - PRODUCTS

### 2.01 MANUFACTURERS

- A. Steel Joists:
  - 1. Canam Steel Corporation: [www.canam-steeljoists.ws](http://www.canam-steeljoists.ws).
  - 2. Nucor-Vulcraft Group: [www.vulcraft.com](http://www.vulcraft.com).
  - 3. Wheeling Corrugating Co.: [www.wheelingcorrugating.com](http://www.wheelingcorrugating.com).
  - 4. Requests for substitutions will be considered in accordance with provisions of Division 1.
    - a. All substitutions must be approved in writing by the Architect or Engineer-of-Record.
    - b. All applications for substitution must include samples and technical data.

### 2.02 STEEL DECK

- A. Refer to structural drawings for notes and details by structural engineer regarding Steel Deck.
- B. Roof Deck: Non-composite type, fluted steel sheet:
- C. Composite Floor Deck: Fluted steel sheet embossed to interlock with concrete:

### 2.03 ACCESSORY MATERIALS

- A. Refer to structural drawings for notes and details by structural engineer regarding Accessory Materials.
- B. Stud Shear Connectors: Made from ASTM A 108 Grade 1015 bars.

### 2.04 FABRICATED DECK ACCESSORIES

- A. Steel Metal Deck Accessories: Metal closure strips, wet concrete stops, and cover plates, 22 gage thick sheet steel; of profile and size as indicated; finished same as deck.
- B. Floor Drain Pans: When required. 14 gage sheet steel, flat bottom, sloped sides, recessed 1-1/2 inches below floor deck surface, bearing flange 3 inches wide, sealed watertight.

## PART 3 - EXECUTION

### 3.01 EXAMINATION

- A. Verify existing conditions prior to beginning work.

### 3.02 INSTALLATION

- A. Erect metal deck in accordance with SDI Design Manual and manufacturer's instructions. Align and level.

- B. Fasten deck to steel support members at ends and intermediate supports at 12 inches on center maximum, parallel with the deck flute and at each transverse flute using methods specified.
  - 1. Welding: Use fusion welds through weld washers.
- C. At welded male/female side laps weld at 18 inches on center maximum.
- D. Weld deck in accordance with AWS D1.3.
- E. At openings between deck and walls, columns, and openings, provide sheet steel closures and angle flashings to close openings.
- F. Position floor drains with flange bearing on top surface of deck. Fusion weld at each deck flute.
- G. Weld stud shear connectors through steel deck to structural members below.
- H. Immediately after welding deck and other metal components in position, coat welds, burned areas, and damaged surface coating, with touch-up primer.

END OF SECTION





SECTION 05400

COLD-FORMED METAL FRAMING

PART 1 – GENERAL

1.01 SECTION INCLUDES

- A. Load bearing formed steel stud exterior wall framing.

1.02 REFERENCES

- A. AISI SG02-1 - North American Specification for the Design of Cold-Formed Steel Structural Members; American Iron and Steel Institute; 2001 with 2004 supplement. (replaced SG-971)
- B. AISI SG-971 - Specification for the Design of Cold-Formed Steel Structural Members; American Iron and Steel Institute; 1996, with 2000 supplement.
- C. AISI SG03-2 - 2002 edition of the Cold-Formed Steel Design Manual; American Iron and Steel Institute; 2002.
- D. ASTM A 153/A 153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware; 2004.
- E. ASTM A 653/A 653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2004a.
- F. ASTM A 1008/A 1008M - Standard Specification for Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy and High-Strength Low-Alloy with Improved Formability; 2004b.
- G. ASTM A 1011/A 1011M - Standard Specification for Steel, Sheet and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low-Alloy and High-Strength Low-Alloy with Improved Formability; 2004a.
- H. AWS D1.1/D1.1M - Structural Welding Code - Steel; American Welding Society; 2004 and errata.
- I. AWS D1.3 - Structural Welding Code - Sheet Steel; American Welding Society; 1998.
- J. SSPC-Paint 15 - Steel Joist Shop Primer; Society for Protective Coatings; 1999 (Ed. 2000).
- K. SSPC-Paint 20 - Zinc-Rich Primers (Type I, "Inorganic," and Type II, "Organic"); Society for Protective Coatings; 2002.

1.03 SUBMITTALS

- A. See Architect for submittal procedures.
- B. Submit shop drawings and calculations sealed and signed by a professional engineer licensed in the state where project is located for review prior to fabrication.
- C. Product Data: Provide data on standard framing members; describe materials and finish, product criteria, limitations, and load tables.
- D. Product Data: Provide manufacturer's data on factory-made framing connectors, showing compliance with requirements.
- E. Manufacturer's Installation Instructions: Indicate special procedures, conditions requiring special attention, and manufacturer's standard details.

#### 1.04 QUALITY ASSURANCE

- A. Manufacturer: Company specializing in manufacturing the types of products specified in this section, and with minimum three years of documented experience.
- B. Installer: Company specializing in performing the work of this section with minimum 3 years of experience.

#### 1.05 PROJECT CONDITIONS

- A. Verify that field measurements are as indicated on the drawings.
- B. Coordinate work of this section with the placement of components within the stud framing system.

### PART 2 – PRODUCTS

#### 2.01 MANUFACTURERS

- A. Metal Framing, Connectors, and Accessories:
  - 1. Dietrich Metal Framing: [www.dietrichindustries.com](http://www.dietrichindustries.com).
  - 2. Clark Steel Framing Systems: [www.clarksteel.com](http://www.clarksteel.com)
  - 3. United States Gypsum Company: [www.usg.com](http://www.usg.com)
  - 4. Nucon Steel [www.nuconsteel.com](http://www.nuconsteel.com).
  - 5. Substitutions: See Section 01 6000 - Product Requirements.

#### 2.02 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. Metal Framing Connectors and Accessories:
  - 1. Same manufacturer as framing.
- C. Maximum Spacing and Layout Requirements: See structural drawings.

#### 2.03 FRAMING MATERIALS

- A. Studs and Track: ASTM C 955; studs formed to channel shape with punched web; U-shaped track in matching nominal width and compatible height.
  - 1. Base Metal: Structural Steel (SS), 33 ksi minimum yield strength.
  - 2. Exterior Wall Studs, Minimum Size: See structural drawings.
  - 3. Galvanized in accordance with ASTM A 653/A 653M G90/Z275 coating.
  - 4. Provide components fabricated from ASTM A 1008/A 1008M, Designation SS steel.
- B. Framing Connectors: Factory-made formed steel sheet, ASTM A 653/A 653M SS Grade 50, with G60/Z180 hot dipped galvanized coating and factory punched holes.
  - 1. Structural Performance: Maintain load and movement capacity required by applicable code, when evaluated in accordance with AISI North American Specification for the Design of Cold Formed Steel Structural Members; minimum 16 gage, 0.06-inch thickness.
- C. Fastening: Members may be fastened together by welds, screw fasteners, drilled anchors or power-driven fasteners that fit the particular application.
  - 1. Securely weld or screw track and studs for fascia, bulkheads, and furr downs to roof framing above to support fascia, bulkheads, and furr downs in tension.
  - 2. Track attachment to concrete may be by proper use of drilled anchors or power-driven fasteners.

3. Stud to track connections may be by welds or screw fasteners each side.
4. Provide non-movement connections for tie-down to foundation, floor-to-floor tie-down, roof-to-wall tie-down, joist hangers, gusset plates, and stiffeners.

#### 2.04 ACCESSORIES

- A. Bracing, Furring, Bridging: Formed sheet steel, 16 gauge.06-inch thickness, finish to match framing components.
- B. Plates, Gussets, Clips: Formed Sheet Steel, 16 gauge.06-inch thickness; finish to match framing components.
- C. Touch-Up Primer for Galvanized Surfaces: SSPC-Paint 20, Type I - Inorganic, complying with VOC limitations of authorities having jurisdiction.

#### 2.05 FASTENERS

- A. Self-Drilling, Self-Tapping Screws, Bolts, Nuts and Washers: Hot dip galvanized per ASTM A 153/A 153M.
  1. Where screw attachment is allowed and detailed on the drawings.
- B. Anchorage Devices: Power actuated.
- C. Welding: In conformance with AWS D1.1.

### PART 3 –EXECUTION

#### 3.01 EXAMINATION

- A. Verify that substrate surfaces are ready to receive work.

#### 3.02 INSTALLATION OF STUDS

- A. Install components in accordance with manufacturers' instructions and ASTM C 1007 requirements or as detailed on the drawings.
- B. Align floor and ceiling tracks; locate to wall layout. Secure in place with fasteners at maximum 24 inches on center or weld to structure as detailed on drawings. Coordinate installation of sealant with floor and ceiling tracks.
- C. Place studs at 16 inches on center typical; not more than 2 inches from abutting walls and at each side of openings. Connect studs to tracks using welding 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. Install intermediate studs above and below openings to align with wall stud spacing.
- H. Provide deflection allowance in stud track, directly below horizontal building framing at non-load bearing framing.
- I. Attach cross studs to studs for attachment of fixtures anchored to walls.
- J. Install framing between studs for attachment of mechanical and electrical items, and to prevent stud rotation.
- K. Touch-up field welds and damaged galvanized surfaces with primer.

END OF SECTION

SECTION 05440  
COLD-FORMED STEEL TRUSSES

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Pre-engineered cold-formed steel trusses.
- B. Cold-formed steel framing accessories.

1.02 DEFINITIONS

- A. Truss Component Manufacturer: The maker of the components that will be assembled into trusses by the Truss Fabricator. See MANUFACTURERS for acceptable Truss Component Manufacturer.
- B. Truss Fabricator: The manufacturer who assembles the Truss Component Manufacturer's components into completed trusses. See MANUFACTURERS for acceptable Truss Fabricators.
- C. Truss Designer: The design professional, individual or organization, having responsibility for the design of the trusses. In this case, the Truss Designer is the Truss Component Manufacturer.

1.03 REFERENCES

- A. AISI SG-671 - Specification for the Design of Cold-Formed Steel Structural Members; American Iron and Steel Institute; August 19, 1986 Edition with December 11, 1989 Addendum.
- B. AISI RG-9518 – Design Guide for Cold-Formed Steel Trusses; American Iron and Steel Institute; December 1995.
- C. ASTM A 370 – Standard Test Methods and Definitions for Mechanical Testing of Steel Products; 1997a.
- D. ASTM A 500 – Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes; 1999.
- E. ASTM A 653/A 653M – Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 1999a.
- F. LGSEA – Field Installation Guide for Cold-Formed Steel Trusses; Light Gauge Steel Engineers Association; October 1999.
- G. LGSEA 551d – Design Guide for Construction Bracing of Cold-Formed Steel Trusses; Light Gauge Steel Engineers Association; February 1997.
- H. LGSEA 551e – Design Guide for Permanent Bracing of Cold-Formed Steel Trusses; Light Gauge Steel Engineers Association; February 1998.

1.04 SUBMITTALS

- A. See administrative requirements given by the architect for submittal procedures.

- B. Product Data: Truss Component Manufacturer's descriptive literature for each item of cold-formed metal framing and each accessory specified in this section.
- C. Shop Drawings: Detailed drawings prepared by Truss Fabricator that:
  - 1. Indicate special components and installations not fully detailed in product data.
  - 2. Indicate in the layout placement drawings the number, types, location, and spacings of trusses and other framing members.
  - 3. Indicate details of truss loading, reactions, uplifts, support locations, material sizes and gauges, permanent truss web bracing, and splices as required for a complete installation.
- D. Design Data: Results of design analysis, bearing the seal and signature of Truss Designer's engineer.
- E. Installation Instructions: Truss Component Manufacturer's printed instructions for handling, storage, and installation of each item of cold-formed metal framing and each accessory specified in this section.

#### 1.05 QUALITY ASSURANCE

- A. Provide design of trusses by Truss Component Manufacturer, using design methodologies recommended in AISI and LGSEA references.
  - 1. Determine mechanical properties of load bearing components by testing in accordance with ASTM A 370.
  - 2. Provide design by professional engineer registered in the state in which project is located.
  - 3. Provide Truss Fabricator's shop drawings.
- B. Pre-Installation Meeting: Meet at job site prior to scheduled beginning of installation to review requirements:
  - 1. Attendees: Require attendance by representatives of the following:
    - a. Truss Fabricator, if requested by installer.
    - b. Installer of this section.
    - c. Other entities directly affecting, or affected by, construction activities of this section, including but not limited to, the following:
      - (1) Installer of truss support framing.
      - (2) Installer of mechanical systems.
      - (3) Installer of electrical systems.
  - 2. Review potential interface conflicts, coordinate layout and support provisions.

#### 1.06 DELIVERY, STORAGE, AND HANDLING OF STEEL TRUSSES

- A. Pack, ship, handle, unload, and lift shop products in accordance with Truss Component Manufacturer's recommendations and in a manner necessary to prevent damage or distortion.
- B. Store and protect products in accordance with Truss Component Manufacturer's recommendations and in manner necessary to prevent damage, distortion, and moisture buildup.

### PART 2 - PRODUCTS

#### 2.01 MANUFACTURERS

- A. Acceptable Truss Component Manufacturer: TrusSteel Division of Alpine Engineered Products, Inc.; PO Box 2225, Pompano Beach, FL 33061. ASD. Tel: (888) 565-9181. [www.TrusSteel.com](http://www.TrusSteel.com) or approved equal.
- B. Acceptable Truss Fabricators: Truss components shall be fabricated into completed trusses by one of the following:
  - 1. Raney Truss, Decaturville, TN.

2. Wheelers Building Materials, Atlanta, GA.
  3. Cascade Manufacturing, Cascade, IA.
  4. Approved equal.
- C. Requests for substitutions will be considered in accordance with provisions of Division 1.
1. All substitutions must be approved in writing by the Architect or Engineer-of-Record.
  2. All applications for substitution must include samples and technical data.

## 2.02 COMPONENTS

- A. Pre-Engineered Cold-Formed Steel Trusses: TrusSteel truss component system by Alpine Engineered Products, Inc., providing a complete horizontal framing system, ready for deck installation, meeting specified requirements.
1. Truss Type, Span, and Height: As indicated on drawings.
  2. Comply with requirements of 1999 Standard Building Code.
  3. Deflection Under All Loads: 1/360 of span, maximum.
  4. Deflection Under Live Loads: 1/480 of span, maximum.
  5. Shop fabricate in accordance with shop drawings, using jiggling systems to ensure consistent component placement and alignment of components, and to maintain specified tolerances; field fabrication is strictly prohibited unless performed by authorized Truss Fabricator using Truss Fabricator's shop assemblers and proper jiggling systems.
  6. Shop fabrication of other cold-formed steel framing components into assemblies prior to erection is permitted; fabricate assemblies in accordance with shop drawings.
  7. Fasten connections within truss assembly with Truss Component Manufacturer's screws only and as shown on the shop drawings; welding and other fasteners are prohibited.
  8. Fabricate straight, level, and true, without rack, and to following tolerances:
    - a. Trusses up to 30 feet (9 m) long: Maximum ½ inch (12 mm) variation from design length.
    - b. Trusses over 30 feet (9 m) long: Maximum ¾ inch (19mm) variation from design length.
    - c. Trusses up to 5 feet (1500 mm) high: Maximum ¼ inch (6 mm) variation from design height.
    - d. Trusses over 5 feet (1500 mm) high: Maximum ½ inch (12 mm) variation from design height.
- B. Truss Chord and Web Components: Alpine TrusSteel components, with rolled or closed edges to minimize the danger of cutting during handling; chord and web components without rolled edges are prohibited.
1. Shapes, Sizes, and Thicknesses: As required to suit design and as indicated on shop drawings.
  2. Chords: Cold-formed from ASTM A 653/A 653/M galvanized steel sheet, minimum G60 coating; minimum yield strength of 55,000 psi (380 MPa).
    - a. Nominal 22 gage members:
      - (1) Minimum bare metal thickness: 0.0284 inch (0.72 mm).
      - (2) Maximum design thickness: 0.0299 inch (0.76 mm).
    - b. Nominal 20 gage members:
      - (1) Minimum bare metal thickness: 0.0329 inch (0.84 mm).
      - (2) Maximum design thickness: 0.0346 inch (0.88 mm).
    - c. Nominal 18 gage members:
      - (1) Minimum bare thickness: 0.0428 inch (1.09 mm).
      - (2) Maximum design thickness: 0.0451 inch (1.15 mm).
    - d. Nominal 16 gage members: (minimum top chord gage where trusses are at 5' spacing)
      - (1) Minimal bare metal thickness: 0.0538 inch (1.37 mm).
      - (2) Maximum design thickness: 0.0566 inch (1.44 mm).
  3. Webs: Cold-formed ASTM A 500 steel structural tubing; minimum yield strength of 45,000 psi (310 MPa).
    - a. Nominal 20 gage members:
      - (1) Minimum bare metal thickness: 0.033 inch (0.84 mm).
      - (2) Maximum design thickness: 0.035 inch (0.89 mm).
    - b. Nominal 18 gage members:
      - (1) Minimum bare metal thickness: 0.047 inch (1.19 mm).

- (2) Maximum design thickness: 0.049 inch (1.24 mm).
  - c. Nominal 16 gage members:
    - (1) Minimum bare metal thickness: 0.063 inch (1.6 mm).
    - (2) Maximum design thickness: 0.065 inch (1.65 mm).
- C. Fasteners used in Fabricating Trusses: Screw fasteners recommended by Truss Component Manufacturer, bearing stamp of Truss Component Manufacturer for ready identification.

## PART 3 - EXECUTION

### 3.01 EXECUTION

- A. Verify that bearing surfaces and substrates are ready to receive steel trusses.
- B. Verify that truss bearing surfaces are within the following tolerances:
  - 1. Variation from Level or Specified Plane: Maximum 1/8 inch in 10 feet (6 mm in 3 m).
  - 2. Variation from Specified Position: Maximum 1/4 inch (6 mm).
- C. Verify that rough-in utilities and chases that will penetrate plane of trusses are in correct locations and do not interfere with truss, bracing, or bridging placement.
- D. Inspect conditions under which installation is to be performed and submit written notification if such conditions are unacceptable to installer.
  - 1. Notify Architect/Engineer-of-Record within 24 hours of inspection.
  - 2. Beginning construction activities of this section before unacceptable conditions have been corrected is prohibited.
  - 3. Beginning construction activities of this section indicates installer's acceptance of conditions.

### 3.02 INSTALLATION

- A. Install trusses in accordance with Truss Component Manufacturer's instructions and Truss Fabricator's shop drawings. Use correct fasteners.
- B. Place components at spacings indicated on the shop drawings.
- C. Install all erection (temporary installation) bracing and permanent bracing and bridging before application of any loads; follow recommendations of LGSEA Field Installation Guide for Cold-Formed Steel Roof Trusses.
- D. Install erection bracing.
  - 1. Provide bracing that holds trusses straight and plumb in safe condition until decking and permanent truss bracing has been fastened to form a structurally sound framing system.
  - 2. All sub-contractors shall employ proper construction procedures to ensure adequate distribution of temporary construction loads so that the carrying capacity of any single truss or group of trusses is not exceeded.
- E. Install permanent bracing and bridging as shown in the Architect/Engineer-of-Record's drawings and notes as shown in the Truss Fabricator's shop drawings.
- F. Removal, cutting, or alteration of any truss chord, web or bracing member in the field is prohibited, unless approved in advance in writing by the Architect/Engineer-of-Record and the Truss Designer.
- G. Repair or replace damaged chords, webs, and complete trusses as directed and approved in writing in advance by the Architect/Engineer-of-Record and the Truss Component Manufacturer.



END OF SECTION



SECTION 05500  
METAL FABRICATIONS

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Miscellaneous Metals:
  - 1. Structural shapes for miscellaneous beams, columns, lintels, frames for wall, roof, and floor openings, miscellaneous bracing for door and window heads, anchor plates, inserts, clip angles, etc.
  - 2. Bearing plates for beams and anchors.
  - 3. Bolts and studs.
  - 4. Miscellaneous bracing angles and support angles.
  - 5. Steel lintels.

1.02 REFERENCES

- A. ANSI A14.3 - American National Standard for Ladders -- Fixed -- Safety Requirements; 2002.
- B. ASTM A 36/A 36M - Standard Specification for Carbon Structural Steel; 2005.
- C. ASTM A 53/A 53M - Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless; 2004a.
- D. ASTM A 123/A 123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products; 2002.
- E. ASTM A 283/A 283M - Standard Specification for Low and Intermediate Tensile Strength Carbon Steel Plates; 2003.
- F. ASTM A 325 - Standard Specification for Structural Bolts, Steel, Heat Treated, 120/105 ksi Minimum Tensile Strength; 2004b.
- G. ASTM A 500 - Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes; 2003a.
- H. AWS A2.4 - Standard Symbols for Welding, Brazing, and Nondestructive Examination; American Welding Society; 1998.
- I. AWS D1.1/D1.1M - Structural Welding Code - Steel; American Welding Society; 2004 and errata.
- J. SSPC-Paint 15 - Steel Joist Shop Primer; Society for Protective Coatings; 1999 (Ed. 2000).
- K. SSPC-Paint 20 - Zinc-Rich Primers (Type I, "Inorganic," and Type II, "Organic"); Society for Protective Coatings; 2002.
- L. SSPC-SP 2 - Hand Tool Cleaning; Society for Protective Coatings; 1982 (Ed. 2004).

1.03 SUBMITTALS

- A. See Architect 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.

1. Indicate welded connections using standard AWS A2.4 welding symbols. Indicate net weld lengths.

#### 1.04 QUALITY ASSURANCE

- A. All fabrication to be completed by a firm regularly engaged in metal fabrications with a minimum of three years' experience.

### PART 2 - PRODUCTS

#### 2.01 MATERIALS - STEEL

- A. Steel Sections: ASTM A 36/A 36M.
- B. Steel Tubing: ASTM A 500, Grade B cold-formed structural tubing.
- C. Plates: ASTM A 283.
- D. Pipe: ASTM A 53/A 53M, Grade B Schedule 40, black finish.
- E. Bolts, Nuts, and Washers: ASTM A 325 (ASTM A 325M), Type 1, galvanized to ASTM A 153/A 153M where connecting galvanized components.
- F. Welding Materials: AWS D1.1; 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. 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.
- D. Exposed Mechanical Fastenings: Flush countersunk screws or bolts; unobtrusively located; consistent with design of component, except where specifically noted otherwise.
- E. 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 FINISHES - STEEL

- A. Prime paint all steel items.
  1. Exceptions: Galvanize items to be embedded in concrete or masonry and items specified for galvanized finish.
  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 A 123/A 123M requirements.
- F. Galvanizing of Non-structural Items: Galvanize after fabrication to ASTM A 123/A 123M requirements.

#### 2.04 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. Field weld components indicated.
- D. Perform field welding in accordance with AWS D1.1.
- E. Obtain approval prior to site cutting or making adjustments not scheduled.
- F. After erection, prime welds, abrasions, and surfaces not shop primed or galvanized, except surfaces to be in contact with concrete.
- G. Bollards are to be filled with concrete, round top of bollard.

#### 3.04 ERECTION TOLERANCES

- A. Maximum Variation from Plumb: 1/4 inch per story, non-cumulative.
- B. Maximum Offset from True Alignment: 1/4 inch.
- C. Maximum Out-of-Position: 1/4 inch.

END OF SECTION

SECTION 05520  
STAIRS AND RAILS

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Includes materials, fabrication, and erection of the metal stairs and railings.
- B. Closed riser stairs with concrete filled treads and platforms.
- C. Guard rails and handrails; interior and exterior conditions as shown in the drawings.

1.02 RELATED SECTIONS

- A. Section 03300 - Cast-In-Place Concrete: Concrete fill for treads and landings.
- B. Section 05120 - Structural Steel Framing: Steel members support stair systems.
- C. Section 05500 - Metal Fabrications: Miscellaneous metal items required for the complete and rigid installation of the metal stairs. Applicable portions of Section 05500 apply to this Section as if repeated herein.
- D. Section 06200 - Finish Carpentry: Preparation of metal and concrete stair components to receive hardwood treads and risers.
- E. Section 09900 - Painting: Application of finish painting over all exposed surfaces.

1.03 REFERENCE STANDARDS

- A. National Association of Architectural Metal Manufacturers (NAAMM): Metal Stairs Manual.
- B. National Association of Architectural Metal Manufacturers (NAAMM): Code of Standard and Practice for the Architectural Metal Industry ("Metal Manual").

1.04 SYSTEM PERFORMANCES

- A. Metal Stair Design Requirements: NAAMM minimum standards for fixed metal stairs construction, proportions, and dimensions: Commercial class.
  - 1. Stair loading
    - a. Live load: 100 Pounds per square foot uniformly distributed, minimum.
    - b. Minimum concentrated loads: 300 Pounds per square foot on four square inch at tread center.
    - c. Follow local code requirements if more stringent than indicated.
    - d. Stair tread deflection:  $L/360$ , maximum at rated loads.
    - e. Stair stringer deflection:  $L/360$ , maximum at rated loads.
  - 2. Concrete filled stair pans:
    - a. The concrete shall be flat, level and prepared to receive the finished flooring material.
- B. Structural Performances for Handrails not Serving as Top Rails: Provide railing assemblies which, when installed, comply with the following minimum requirements.
  - 1. Concentrated Load: 200 Pound load applied at any point and in any direction.
  - 2. Vertical and Horizontal Loading: 50 Pounds per linear foot uniform load applied in any direction.
  - 3. Loadings conditions above shall not be applied concurrently, but each shall be applied to produce maximum stress in each of the respective components or any of the supporting components.

## 1.05 QUALITY ASSURANCE

- A. Materials shall be free from defects impairing strength, durability, or appearance, of best commercial quality for purposes specified. Exposed surfaces throughout the building shall have the same inherent texture and color for like location. Fastenings shall, insofar as practicable, be non-corrosive, non-staining, and concealed. Fastenings which must be exposed shall be of the same material, color, and finish as material to which applied, and shall be countersunk and finish flush. Exposed welds shall be ground smooth to form a neat, uniform fillet without weakening base metal. Moulded, bent, or shaped members shall be formed with clean, sharp arises, without dents, scratches, cracks, or other defects. Provide all anchors, bolts, shims, and accessory items required for building into fastening to adjacent work.
- B. Fabricate in accordance with NAAMM "Metal Manual", except where more stringent requirements are indicated, to meet the minimum requirements for commercial classification, closed risers.

## 1.06 SUBMITTALS

- A. Copies of shop drawings and complete erection data shall be furnished to the Architect on all items specified in this Section. Show all dimensions, welds, anchorages whether provided by the stair manufacturer or required to be installed by others. Show relationship to adjacent materials/work. Shop drawings shall bear the seal of a structural engineer licensed in the State in which the project is constructed. Submit shop drawings in accordance with Section 01340 prior to any fabrication.

## 1.07 FIELD MEASUREMENTS

- A. Take all necessary field measurements to verify or supplement dimensions shown on the drawings. Be responsible for furnishing all necessary instructions for the setting of anchors, bearing plates, and miscellaneous items. Ascertain that all materials are properly set during the progress of work.

## PART 2 - PRODUCTS

### 2.01 MATERIALS

- A. Steel Stairs and Platform: Fabricate in the shape and size as shown on the Drawings, with risers, treads and landing backing being formed from minimum 12 gauge steel. Structural supports and stringers shall be as indicated on the drawings. All exposed steel connections shall be welded with welds ground smooth. Face stringers shall be neatly fitted to connecting members and shall have closed ends. After fabrication, all members shall be given a shop coat of rust inhibitive primer.

## PART 3 - EXECUTION

### 3.01 INSPECTION

- A. Verify that structure is ready to receive the steel stairs, and that all supporting members are properly located, plumb, level and rigidly anchored and/or connected. Correct all irregularities detrimental to the stair installations prior to installing any metal stairs or landings.
- B. Verify that required sleeves and weld plates have been properly located and set prior to installing railings.

### 3.02 ERECTION

- A. Stairs shall be erected plumb and straight and to proper lines. Connection to walls and other construction shall be made in complete accordance with fabricator's instructions.



B. Handrails and Railings

1. All handrails and railings shall be fabricated in the sizes and shapes shown on the drawings. Steel railings shall have all connections shall be welded and all welds will be ground smooth. After fabrication, all handrails and railings shall receive the specified paint finish.
2. Clean field welds, bolted connections, and abraded areas. Apply primer compatible with shop applied primer.
3. Anchor railings to walls.

3.03 PAINTING AND PROTECTIVE COATING

- A. Clean all surfaces and apply one shop coat of Zinc Rich primer. Anchors that are built into masonry shall be coated with asphalt paint unless specified to be galvanized. Metal work to be encased in concrete shall be left unpainted unless specified or noted otherwise. Refer to Section 09900 for field application of paint to ferrous metals and galvanized surfaces.

3.04 PROTECTION

- A. Protect installed stairs from damage until date of Substantial Completion. Damaged factory prime coats shall be corrected immediately. Remove all rust before re-priming. Where touch-up is required sand or steel wool prime coat to feather edge and brush out touch-up to provide a smooth finish surface ready for job painting.

3.05 CLEANING

- A. Before Substantial Completion Inspection, remove all protective maskings and coverings, and clean exposed surfaces of foreign matter. At the completion of this work, remove from the site all excess materials and debris. Leave entire work area in a neat workmanlike condition ready for final inspection.

END OF SECTION



SECTION 05800  
EXPANSION CONTROL

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Includes expansion joint devices for roofs, walls, floors, and ceilings.

1.02 RELATED SECTIONS

- A. Section 03300 - Cast-In-Place Concrete: Expansion joint cover anchored to concrete slab.
- B. Section 04210 - Brick Masonry: Expansion joint cover installed in brick veneer.
- C. Section 04200 - Reinforced Unit Masonry: Expansion joint cover installed in conjunction with C.M.U.
- D. Section 07100 - Waterproofing and Dampproofing: Expansion joint cover installed in conjunction with the weather barrier.
- E. Section 07464 - Fiber-Cement Siding, Trim and Soffit: Expansion joint cover installed in conjunction with fiber cement products.
- F. Section 07530 - Single-Ply Membrane Roof: Expansion joint cover installed between fiber cement siding and membrane roofing system.

1.03 REFERENCES

- A. ASTM B 221: Aluminum and Aluminum Alloy, Extruded Bar, Rod, Wire, Shape, and Tube.
- B. ASTM B 308: Aluminum Alloy, 6061-T6 Standard Structural Shapes, Rolled or Extruded.

1.04 SUBMITTALS

- A. Provide submittals in accordance with Section 01340.
- B. Product Data: Submit manufacturer's technical data describing materials and installation instructions; submit independent laboratory test reports certifying test results for fire-rated assemblies.
- C. Shop Drawings: Indicate device profiles, finishes, dimensions, locations, affected adjacent construction, anchorage devices, and location and method of splicing.

1.05 QUALITY ASSURANCE

- A. Provide UL listed closures with joint devices to ensure integrity of fire-rated assemblies.

1.06 PRODUCT DELIVERY, STORAGE, & HANDLING

- A. Deliver products in manufacturer's original packaging with labels intact. Store under cover in dry location until installed. Store off ground, protect from weather, intrusion of foreign materials and construction activities.
- B. Cover exposed metal/aluminum surfaces with manufacturer's standard protective paper or wrapping.

## PART 2 - PRODUCTS

### 2.01 ACCEPTABLE MANUFACTURERS

- A. The following manufacturers are acceptable for use on this project subject to compliance with project requirements:
  - 1. Construction Specialties, Inc. (C/S Group) of Muncy, Pennsylvania.
  - 2. Balco Inc. of Wichita, Kansas.
  - 3. MM Systems Corporation of Pendergrass, Georgia.
- B. EPDM Gutter: 60 mil flexible internal gutter for roof expansion joints
  - 1. Johns Manville, or equal as approved by Architect.

### 2.02 MATERIALS

- A. Aluminum: Extruded, ASTM B 221, alloy 6063-T5 or ASTM B 308.
- B. Elastomeric: Closed cell Neoprene or EPDM. PVC is not acceptable on exterior joint devices.
- C. Threaded Fasteners: Aluminum or stainless steel.

### 2.03 TYPES & LOCATIONS

- A. Refer to Drawings for expansion joint locations.
- B. Model numbers referenced herein are by Construction Specialties, Inc unless noted otherwise.
- C. Exterior Products:
  - 1. Wall to Wall - Exterior: No. VF-200
  - 2. Roof to Wall: No. BRJ-100
  - 3. Roof to Wall – internal gutter: 90 mil EPDM roofing.
- D. Interior Products:
  - 1. Standard components and accessories for suspended gypsum board ceiling systems. Refer to Section 09250.
  - 2. Manufacturer's standard aluminum flanged interior wall and ceiling expansion covers.
    - a. Interior conditions in gypsum board assemblies: FWF-200
    - b. Interior conditions in gypsum ceiling systems: FWF-200
- E. Other conditions not listed here: Selected from manufacturer's standard devices.

### 2.04 FINISH

- A. Exposed Extruded Sections on Walls: Pre-finished white or primed for field painting.
- B. Elastomeric Fillers: White or paintable.

### 2.05 FABRICATION

- A. Back paint components in contact with cementitious materials to prevent electrolysis.
- B. Shop assemble components and package with anchors and fittings.
- C. Provide joint components in single lengths wherever practical. Minimize site splicing.
- D. Fabricate seismic joint covers capable of movement in all directions.

## PART 3 - EXECUTION

### 3.01 EXAMINATION

- A. Verify that surfaces are properly aligned and suitable to receive expansion joint devices.

### 3.02 INSTALLATION

- A. Install expansion joints devices and components in accordance with manufacturers' printed instructions.
- B. Align work plumb and level, flush with adjacent finish except where detailed otherwise.
- C. Rigidly anchor to substrate to prevent movement or misalignment.
- D. Shingle-to-shingle condition, install the expansion cover as flat as practicable and allowed by the manufacturer for the joint size and expected movement. Install shingles as close to the cover as allowed by the manufacturer to minimize visibility.
  - 1. Install EPDM internal gutters as shown in drawings. At ends, seal gutter except 1/2" diameter drain hole with mesh bug screen. Gutter shall be continuous from ridge to eave, sealed with manufacturer's approved adhesive.

### 3.03 CLEANING

- A. Remove manufacturer's protective paper after finish work in adjacent areas has been completed. Upon removal, clean exposed surfaces with suitable cleaner that will not harm factory applied finishes.

### 3.04 PROTECTION

- A. Protect completed installation from damage by construction operations. Replace damaged items prior to date of Substantial Completion inspection.

END OF SECTION