SECTION 054000- COLD-FORMED METAL FRAMING

PART 1 GENERAL

1.1 SUMMARY

A. Section includes non-load bearing formed steel infill stud framing.

B. Related Sections:

1. Section 06 10 00 – Rough Carpentry.
2. Section 07 90 00 – Joint Protection.
3. Section 09 29 00 – Gypsum Board.

1.2 REFERENCES

A. American Iron and Steel Institute:

1. AISI General - Standard for Cold-Formed Steel Framing - General Provisions.
2. AISI Header - Standard for Cold-Formed Steel Framing - Header Design.
3. AISI NAS - North American Specification for Design of Cold-Formed Steel Structural Members.
4. AISI PM - Standard for Cold-Formed Steel Framing - Prescriptive Method for One and Two Family Dwellings.

B. ASTM International:

1. ASTM A1003/A1003M - Standard Specification for Steel Sheet, Carbon, Metallic- and Nonmetallic-Coated for Cold-Formed Framing Members.
2. 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.

C. American Welding Society:

1. AWS D1.1 - Structural Welding Code - Steel.
2. AWS D1.3 - Structural Welding Code - Sheet Steel.

D. California Department of Health Services:

1. CA/DHS/EHLB/R-174 - Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers, including 2004 Addenda.

E. Green Seal:

1. GC-03 - Anti-Corrosive Paints.

F. National Association of Architectural Metal Manufacturers:

1. NAAMM ML/SFA 540 - Lightweight Steel Framing Systems Manual.

G. SSPC: The Society for Protective Coatings:

1. SSPC Paint 15 - Steel Joist Shop Paint.
2. SSPC Paint 20 - Zinc-Rich Primers (Type I - Inorganic and Type II – Organic

H. Steel Stud Manufacturers Association:

1. SSMA - Product Technical Information.

I. International Building Code (IBC).

1.3 SYSTEM DESCRIPTION

A. Maximum Allowable Deflection:
1. Exterior Studs: 1:600 of span.
2. Interior Studs: 1:240 of span.

B. Wall System:
1. Design to AISI NAS, AISC General, and AISC Header.
2. Design to provide for 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.
3. Design system to accommodate:
a.) Construction tolerances, deflection of building structural members, and clearances of intended openings.
b.) Expansion and contraction of members and building movement without damage to connections or members.

1.4 PERFORMANCE REQUIREMENTS

A. Select interior stud thickness to resist minimum 10 psf uniform lateral load and maximum 1/240 deflection.

B. Minimum stud thicknesses and strength shall consider any and all component attachment requirements, such as windows, doors, louvers, storefronts, curtain walls, etc

1.5 SUBMITTALS

A. Section 01 30 00 - Submittal Procedures: Submittal requirements.

B. Shop Drawings:
1. Indicate component details, framed openings, bearing, anchorage, loading, welds, type and location of fasteners, and accessories or items required of related Work.

C. Product Data: Submit data on standard framing members, connections, and connecting elements; describe materials and finish, product criteria, and limitations.

D. Manufacturer's Installation Instructions: Submit special procedures and perimeter conditions requiring special attention.

E. Mill Certifications: Submit mill certifications for steel delivered to site. Certify steel bare metal thickness in 0.001 inch, yield strength, tensile strength, total elongation in 2 inch or 8 inch gauge length, chemical analysis, and galvanized coating thickness.

F. Design Data: Submit design calculations sealed by a Professional Engineer licensed in the state of Texas.

1.6 QUALITY ASSURANCE

A. Calculate structural properties of framing members in accordance with AISI NAS.

B. Design shall be in compliance with the IBC and Texas Department of Insurance for Windstorm (where applicable) requirements and shall consider any and all requirements for components to be attached to cold-formed metal framing, such as doors, windows, storefronts, curtain walls, louvers, etc.

C. Furnish framing materials in accordance with SSMA - Product Technical Information.

D. Perform Work in accordance with the following:
1. Framing: AISI General and AISI NAS.
2. Headers: AISI Header.
3. Trusses: AISI Truss.
4. Wall Studs: AISI WSD.
5. Lateral Design: AISI Lateral.

E. Maintain one copy of each document on site.

1.7 QUALIFICATIONS

A. Manufacturer: Company specializing in manufacturing products specified in this section with minimum three years documented experience.
1. Current member of Steel Stud Manufacturers Association.

B. Installer: Company specializing in performing Work of this section with minimum three years documented experience and approved by manufacturer.

C. Design structural elements under direct supervision of Professional

Engineer experienced in design of this Work and licensed in the state of Texas.

D. Form, fabricate, provide, and connect components in accordance with NAAMM ML/SFA 540 - Lightweight Steel Framing Systems Manual.

1.8 COORDINATION

A. Section 01 04 00 – PROJECT ADMINISTRATION.

B. Coordinate placement of components within stud framing system as required.

PART 2 - PRODUCTS

2.1 COLD-FORMED METAL FRAMING

A. Manufacturers:
1. ClarkDietrich Building Systems
2. MBA Building Supplies.
3. Nuconsteel, A Nucor Company.
4. Substitutions: Section 01 60 00 - Product Requirements.
5. Cold-Formed Metal Framing: ASTM C955.

2.2 FRAMING COMPONENTS

A. Steel Sheet: ASTM A1003/A1003M; Structural Grade, Type H, metallic coated:
1. Grade: As determined by performance requirements specified.
2. Coating: G90.

B. Studs: Steel sheet, formed to channel shape, punched web, size and gauge as determined by performance requirements specified.

C. Joists, Purlins: Steel sheet, formed to channel shape, solid web; size and gauge as determined by performance requirements specified.

D. Track: Steel sheet, formed to channel shape; same width as studs, tight fit; gauge as determined by performance requirements specified, solid web.

2.3 ACCESSORIES

A. Bracing, Furring, Bridging: Formed sheet steel, thickness determined by performance requirements specified.

B. Plates, Gussets, Clips: Formed sheet steel, thickness determined by performance requirements specified.

C. Touch-Up Primer for Galvanized Surfaces: SSPC Paint 20 Type II Organic.

2.4 FASTENERS

A. Self-drilling, Self-tapping Screws, Bolts, Nuts, and Washers: Steel, hot dip galvanized.

B. Anchorage Devices: Power actuated, drilled expansion bolts, and cast-in-place anchor rods.

C. Welding: In conformance with AWS D1.1 and AWS D1.3.

2.5 FABRICATION

A. Fabricate assemblies of formed sections of sizes and profiles required.

B. Fit, reinforce, and brace framing members to suit design requirements.

C. Fit and assemble in largest practical sections for delivery to site, ready for installation.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Section 01 31 00 – Project Management & Coordination: Coordination and project conditions.

B. Verify substrate surfaces and building framing components are ready to receive Work.

C. Verify rough-in utilities are in proper location.

3.2 ERECTION OF STUDS

A. Align floor and ceiling tracks; locate to wall and partition layout. Secure in place with fasteners or by welding at maximum 24 inches oc, or as determined by performance requirements specified, whichever spacing is less. Coordinate installation of acoustic sealant with floor and ceiling tracks, if required.

B. Place studs as determined by performance requirements specified; not more than 2 inches from abutting walls and at each side of openings. Connect studs to tracks using clip and tie, fastener or welding method.

C. Construct corners using minimum three studs. Double stud wall openings, door jambs, and window jambs.

D. Erect load bearing studs one piece full length. Splicing of studs is not permitted.

E. Erect load bearing studs, brace, and reinforce to develop full strength, to achieve design requirements.

F. Fully seat axial loaded studs in receiving tracks (maximum 1/16 inch gap between stud and track web).

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

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

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

J. Attach cross studs or furring channels 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 metallic coatings surfaces with primer to match shop coating.

M. Complete framing ready to receive windows, doors, louvers, storefronts, curtain walls, and sheathing.

3.3 ERECTION OF JOISTS AND PURLINS

A. Install framing components.

B. Make provisions for erection stresses. Install temporary bracing to maintain alignment, until permanent bracing and attachments are installed.

C. Place joists and purlins as determined by performance requirements specified; not more than 2 inches from abutting walls. Connect joists to supports using fastener or welding method.

D. Set floor and/or ceiling joists parallel and level, with lateral bracing and bridging.

E. Locate joist end bearing directly over load bearing studs or install load distributing member to top of stud track.

F. Install web stiffeners at reaction points.

G. Touch-up field welds and damaged metallic coatings surfaces with primer to match shop coating.

3.4 ERECTION TOLERANCES

A. Maximum Variation from Indicated Position: +/- 1/8 inch.

B. Maximum Variation of Members from Plane: 1/8 inch in 10 feet.

END OF SECTION 054000