

**DIVISION 5 - METALS**

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### 05 40 00 COLD-FORMED METAL FRAMING

#### 05 41 00 Structural Metal Stud Framing

NAU requires all new construction to follow the requirements of the 2009 ICC International Building Code, Chapter 22, STEEL.

In addition, all wall framing to follow the following:

Walls up to 10' cold rolled studs to be 25 gauge.

Walls over 10' to 14' cold rolled studs to be 20 gauge.

Walls over 14' cold rolled studs to be 16 gauge.

All wall studs to be minimum 16" on center.

Additional standards for cold formed stud walls as cited in the IBC are: AISI S211 or AISI S100.

### 05 50 00 METAL FABRICATIONS

#### General

This section applies to all metal fabrications that will be used by the DP that have a visual aesthetic impact both interior and exterior. Great care should always be exercised by the DP in the design and detailing of metal fabrication in that they strictly comply to all applicable codes, are relatively easy to construct and maintain (finishes), and do not create potential hazards due to inconsistent heights, surface textures, harsh protrusions or if it blends too well with adjacent surfaces or finishes that could create a special hazard to the visually or physically impaired.

#### Design Standard

Applicable Items: Rough Hardware, Ladders, Nosings, Trim, Pipe Railings, Stairs, Bollards and Architectural Features.

Welds should be smoothly ground to match surface texture of parent metal. All gaps, holes and gouges should be filled with a permanent material (solder or brazing). Design limitations of grinders, files etc., dictate that adjoining metal tubing pieces at angles less than 125° generally need a minimum of 1/4" radius butt weld in order to grind smooth.

Adjoining railing splices shall be fully concealed in runs that appear constant. At elbow bends, the design should facilitate metered joints.

Metal used for railings should be tube stock, not solid stock, and conform to ASTM A 500. Limiting unsupported length should not exceed 6' for diameters 2" or less. Cable used as railing intermediates is not allowable.

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The use of expansion bolts to secure railing assemblies to vertical or horizontal surfaces is not allowable. Anchorage systems should consist of direct imbeds (sleeved or plates) and/or welding.

Exterior exposed metal fabrications shall have a spray applied epoxy-polymide type primer paint and spray applied finish paint-epoxy based and/or electrostatically applied. A color should be chosen that does not easily fade when exposed to sunlight and hides hand prints. Ladders shall be a minimum width of 18", 3/4" diameter rungs spaced 12" o.c., braced a minimum of 5' o.c. Rungs should have a non-slip type finish.

All stair nosings shall have a permanently applied non-slip surface, either integral or imbedded, 2" wide minimum the width of the tread.

Where metal stair risers are exposed (not covered), they shall have spray applied epoxy-polymide type primer paint and spray applied finish paint-epoxy based and/or electrostatically applied. A color should be chosen that does not easily fade when exposed to sunlight and hides the shoe-scuff marks.

At the top and bottom of stair landings, a contrasting color and texture to the normal stair treads shall be used to facilitate the blind and visually impaired.

Expansion joints should be provided in continuous runs at a minimum interval of 40 feet.

All exposed to public fabrications with right angles corners shall be radiused a minimum of 1/8".

Metal bollards shall be a minimum of 6" square or 4" diameter round and be directly or sleeve set a minimum of 1/3 the exposed height below the finished adjacent surface.

Metal trim in continuous runs shall have concealed splices and be of sufficient gauge that natural distortions are not visually apparent. All exposed edges to the public shall be radiused or sharp edges eased.

**05 51 00**  
05 51 13

**Metal Stairs**

**Metal Pan Stairs**

Metal pan stairways are the preferred product to be specified for interior locations. Alternatives shall require prior approval by Facility Services, Planning, Design, & Construction. Open risers are not permitted. Provide colored safety edge at the top and bottom steps, color as selected by the Owner. All stair nosings shall have a permanently applied non-slip surface, either integral or imbedded, 2" wide minimum the width of the tread.

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Metal pan stairways shall not be specified for unprotected exterior locations.

- 05 51 16 Metal Floor Plate Stairs
- 05 51 19 Metal Grating Stairs
- 05 51 23 Metal Fire Escapes
- 05 51 33 Metal Ladders
- 05 51 33.13 Vertical Metal Ladders
- 05 51 33.16 Inclined Metal Ladders
- 05 51 33.23 Alternating Tread Ladders
- 05 51 36 Metal Walkways
- 05 51 36.13 Metal Catwalks
- 05 51 36.16 Metal Ramps

**05 52 00 Metal Railings**

05 52 13 Pipe and Tube Railings

In general, handrails shall be specified for both sides of all stairs, ramps, etc. Handrail design shall conform to the latest edition of the IBC adopted by the University and all designs shall be cross-referenced to the Americans with Disabilities Act Accessibility Guidelines referenced in Division 1.

**\* \* \* END OF SECTION \* \* \***