



Design Standard Metals

Purpose:

This design standard has the purpose of creating a consistent application of metal work throughout the South San Francisco Unified School District thereby achieving a standard of aesthetic quality, maintenance and performance throughout all renovation and new building projects.

Design Standard:

Metal Framing – Alterations to Existing Conditions

- The A/E shall identify the type of wall framing indicated on any existing drawings and request that the District perform destructive testing where necessary to confirm existing wall framing, especially at existing restrooms or at the location of planned new restrooms.

Handrails and Guardrails

- In order to provide adequate construction tolerance and consistency among all installations, code and ADA-compliant handrails shall be mounted 36" above the floor surface (midway between the code-required range of 34" to 38").
- Provide both code-compliant (adult-height) and code-recommended (children's height) handrails at all stairs and ramps serving Kindergarten through 2nd grade. The upper handrail height shall be mounted with the top 36" above the floor surface as required by both ADA and CBC. The lower handrail shall be mounted with the top 25" above the floor surface to provide the minimum code-required CLEAR distance of 9", plus construction tolerance, between the bottom of the upper handrail and the top of the lower handrail.
- Code-required handrail extensions beyond the top and bottom tread nosings and ramp edges shall be straight and continuous before returning to an adjacent wall or to the floor. This means that the total distance from edge of nosing to end of the handrail termination, after accounting for the handrail return and required 1½" railing diameter, shall be a minimum of 1'-3" at the top of stairs (and top and bottom of ramps) and 1'-3" plus the tread width at the bottom. At the bottom of stairs, provide an actual fixed dimension on the drawings, not a note requiring the contractor to determine the tread width. In addition, dimensioning and detailing shall provide adequate construction tolerance.



South San Francisco Unified School District



Sections 05 00 00

Version 1, 2011.9.30

- At this time, DSA requires an absolute 1'-1/2" dimension from the handrail to the wall. If the 1'-1/2" maximum handrail width is used, the dimension from the centerline of the bracket mounting must be 2-1/4". It is recommended that factory produced handrail bracket be utilized in most conditions to avoid tolerance issues. One such bracket is the Wagner Companies, 1/4" formed handrail bracket available in steel, stainless, aluminum or brass. The steel version is #1930R-24. www.wagnercompanies.com
- New guardrails shall be designed to comply with CBC requirements regarding the maximum spacing of intermediate members. Existing guardrails shall be retrofitted to meet the code requirements for maximum spacing. In addition, for safety at both new and retrofitted guardrails, openings between intermediate members and in panels or mesh shall be limited in size and designed to inhibit climbing. Guardrails designed as a series of horizontal railings or cables are not allowed.

Miscellaneous Metal Fabrications

- Provide safety guardrails at 42" high (or safety cable system) around rooftop equipment that is within 6 feet of any roof edge. A cover, guardrail, or equivalent, on all open sides, shall guard every floor, roof opening or skylight.
- Roof tie-backs (meeting Title 8, California Code of Regulations, section 3291 (f) or equivalent are required where edges of roofs and other architectural features (height changes, light wells, etc.) expose employees performing reasonably anticipated maintenance (example – clearing of gutters) activities to fall hazards. Safety lines and/or lanyards, secured to tie-backs for fall protection.
- Toe boards shall be installed around the edges of openings where people may be present below.
- Removable bollards are to be flush with the ground, with contrasting colors, and lockable.

Finish

- Exterior handrails and guardrails: Unpainted galvanized steel is the default for most exterior applications. Paint galvanized steel to match existing where required to provide a consistent appearance.
- Interior handrails and guardrails: Use clear anodized aluminum or unpainted galvanized steel. Match existing railings to remain wherever possible. Wooden handrails are not allowed.
- Shop prime all interior steel. Fabricated steel that has not been properly protected during construction that has developed rust: Rust areas must be removed and re-primed.



South San Francisco Unified School District



Sections 05 00 00

Version 1, 2011.9.30

- Aluminum finishes exposed to the weather and subject to excessive wear (such as top rails and handrails) should have heavy-duty coating, suitable for salt environments (0.018-mm-thick anodic coating).

Galvanizing

- Galvanize all metal exposed to the weather, in contact with the ground, in contact with concrete or in with high moisture areas.
- In designing metal fabrications for galvanizing after fabrication, avoid conditions that require field welding. Design items in segments that can be transported easily and that will fit into the galvanizing process dip tank where possible. Also remember; hollow shapes require vent and drain holes that allow the cleaning solution, air, and molten zinc to flow freely into and back out of the item. These holes can often be located so that they serve to drain the completed item of condensation and other water that might otherwise accumulate.

Approved Manufacturers

- Metal Handrail Brackets- Wagner Companies
- Metal Gratings- Mc Nichols Company

Substitutes Allowed?

- Yes if performance and quality can be evidenced.

Associated Design Standards

- NAAMM- National Association of Architectural Metals Manufacturers
- ANSI A14.1 Safety Requirements for Fixed Ladders

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