Thompson Fabricating LLC
An Industry Leader

Thompson Fabricating, LLC
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Design Specifications for Public-Access Guardrail

(International Building Code)

1. Guardrails and Handrails shall be the product of a company normally engaged in the manufacture of pipe railing. Railings shall be shop assembled in lengths not to exceed 24 feet for field erection.

2. The handrail shall be made of pipes joined together with component fittings. Samples of all components, bases, toeboard and pipe must be submitted for approval at the request of the engineer. Components that are pop-riveted or glued at the joints will not be acceptable. All components must be mechanically fastened with stainless steel hardware. **Handrail and components shall be TUFRAIL, as manufactured by Thompson Fabricating, LLC (Birmingham, Alabama) or an approved equal.**

3. Railings shall be 1 1/2" Schedule 40 aluminum pipe alloy 6105-T5, ASTM-B-429 or ASTM-B-221. Post shall be 1 1/2" Schedule 80 aluminum pipe of the same alloy. Post spacing shall be a maximum of 6'-0".

4. Guardrails and Handrails shall be designed to withstand a 200lb concentrated load applied in any direction and at any point on the top rail. Guardrails and Handrails shall also be designed to withstand a uniform load of 50 lb/ft applied horizontally to the top rail. Uniform loads are not to be applied simultaneously with the concentrated loads.

5. Pickets and intermediate railings shall be provided such that a 4-inch diameter sphere cannot pass through any opening up to a height of 34 inches. From a height of 34 inches to 42 inches above the adjacent walking surface, a sphere 8 inches in diameter shall not pass. The triangular openings formed by the riser, tread and bottom rail at the open side of a stairway shall be of a maximum size such that a sphere of 6 inches in diameter cannot pass through the opening.

6. Pickets and intermediate railings shall be designed to withstand a horizontally applied normal load of 50lb on an area not to exceed one square foot including openings and spaces between rails.

7. The manufacturer shall submit calculations for approval at the request of the Engineer. Testing of base castings or base extrusions by an independent lab or manufacturer's lab (if manufacturer's lab meets the requirements of the Aluminum Association) will be an acceptable substitute for calculations. Calculations will be required for approval of all other design aspects.

8. Posts shall not interrupt the continuation of the top rail at any point along the railing, including corners and end terminations (OSHA 1910.23). The top surface of the top railing shall be smooth and shall not be interrupted by projected fittings.

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9. The mid-rail at a corner return shall be able to withstand a 200lb load without loosening. The manufacturer is to determine this dimension for their system and provide physical tests from a laboratory to confirm compliance.

10. Concrete anchors shall be stainless steel type 303 or 304 wedge anchors and shall be furnished by the handrail manufacturer. The anchor design shall include the appropriate reduction factors for spacing and edge distances in accordance with the manufacturers published data.

11. Toeboard shall conform to OSHA standards. Toeboard shall be a minimum of 4" high and shall be an extrusion that attaches to the posts with clamps that will allow for expansion and contraction between posts. Toeboards shall be set 1/4" above the walking surface. Toeboards shall be provided on handrails as required by OSHA and/or as shown on drawings. Toeboards shall be shipped in stock lengths for field installation.

12. A self-closing gate shall guard openings in the railing (OSHA 1910.23). Safety chains shall not be used unless specifically shown on the drawings.

13. Finish shall be Aluminum Association M10-C22-A41 (215-R1). The pipe shall be plastic-wrapped. The plastic wrap is to be removed after erection.

14. Aluminum surfaces in contact with concrete, grout or dissimilar metals will be protected with a coat of bituminous paint, Mylar isolators or other approved material.