City of Oakland
Building Bureau- Permit Inspections Services
250 FRANK H. OWAGA PLAZA. SECOND FLOOR. OAKLAND CA 94612
https://www.oaklandca.gov/topics/building-inspections
E-Mail:InspectionInfo@oaklandca.gov

Cable Railings and Spacing for Guardrails

INTRODUCTION

California Residential Code and California Building Code requires that residential guardrails have an opening constructed so that a 4-inch diameter sphere cannot pass through. Various cable rail configurations are often proposed to minimize the rail system's impact on the view from the deck. These systems are often difficult to evaluate because achieving and maintaining the spacing requirement depends on other factors than just the distance between the cables. One example of another factor is the tension of the cables and the anchorage of the cable supports to the deck. The purpose of this handout is to provide a performance standard which will allow field evaluation of these systems.

TECHNICAL DETAILS

1. Cable rail systems shall be listed manufactured systems or shall include a design analysis.

2. Cables shall have a minimum of 1/8" in diameter.

3. The system shall incorporate a turnbuckle or other device on each cable so that the tension can be adjusted over time. This device shall include a lock nut or other device so that a child cannot easily reduce the tension in the cable.

4. When cable rails are shown on the plans, the plan checker shall insure that this standard is made available to the applicant, either by requiring a note on the plans or by attaching a copy of this bulletin to the job and office copies of the plans.

5. Cable rail systems meeting the above performance standard shall be considered complying with the code and may be approved without an application for alternate methods and materials.

PRE-APPROVED TESTING CRITERIA

The following design and testing criteria are pre-approved:

1. Railing Design
   a. 3.5" maximum cable spacing
   b. 4' maximum support spacing
   c. 1/8" stainless steel cables
   d. Intermediate rails shall be designed to resist a concentrated load of 50 pounds in accordance with Section 4.5.1.1 of ASCE 7.

2. Cable shall be tensioned to a minimum 200lb. as per ASCE-7 4.5.1.1. Cable tension testing equipment shall be provided by the builder.

If an alternate railing design is proposed the applicant must provide the testing criteria from the manufacturer or a licensed Engineer and any required testing equipment.

REFERENCES

California Building Code, Sections 1015.4 and 1607.8.1. ASCE 4.5.1.1. California Residential Code R301.5 and R312