

DEPARTMENT OF INDUSTRIAL RELATIONS
DIVISION OF OCCUPATIONAL SAFETY AND HEALTH
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Juliann Sum, Chief

December 19, 2014

Greg McClelland
Executive Director
990 Reserve Drive
Suite 104
Roseville, CA 95678

Re: Handrails/stair rails in construction, T8 CCR Section 1626

Dear Mr. McClelland:

The Division received your written letter dated December 15, 2014 to clarify the use of 3/8" diameter steel wire rope for railing purposes in stairways and stair access points during construction activities only. The Division understands your question does not relate to permanent handrails/stair rails to be put in at a later time, should you need specifications about permanent handrails/stair rails you can refer to Title 8 (T8), California Code of Regulations (CCR), Section 3214 <https://www.dir.ca.gov/title8/3214.html>.

The regulations that pertain to handrails/stair rails in construction are T8 CCR Section 1626 Stairwells and Stairs. The main concern of using wire rope would be the deflection of the top rail once pressure is applied by the user. An increased amount of vertical members would need to be installed to withstand the axial load applied on the top rail from users. The Division allows the use of wire rope rails when all conditions in T8 CCR 1626 are met. <https://www.dir.ca.gov/title8/1626.html>

- 1626(a)(2) Railings and toeboards meeting the requirements of Article 16 of these safety orders shall be installed around stairwells.
- 1626(c)(1)(A) At least one handrail; and (B) A **stair rail** consisting of a top rail and mid-rail along **each unprotected side or edge**.
- 1626(c)(1)(B)(3) The height of stair rails shall be not less than **34 inches nor more than 38 inches** from the upper surface of the stair rail to the surface of the tread, in line with the face of the riser at the forward edge of the tread.
- 1626(c)(1)(B)(4) **Mid-rails** shall be located at a height **midway** between the top edge of the stair rail and the stairway steps.

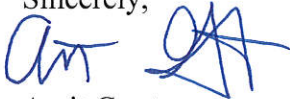
- 1626(c)(1)(B)(5) Handrails and the top rails of stair rails shall be capable of withstanding, without failure, a force of at least 200 pounds (890 n) applied within 2 inches (5 cm) of the top edge, in any downward or outward direction, at any point along the top edge.

When the 200 pounds of force is applied careful attention shall be placed on the deflection of the top rail, which shall remain between 34-38 inches.

- 1626(c)(1)(B)(6) The height of handrails shall be not less than 34 inches nor more than 38 inches from the upper surface of the handrail to the surface of the tread, in line with the face of the riser at the forward edge of the tread.
- 1626(c)(1)(B)(7) When the top edge of a stair rail also serves as a handrail, the height of the top edge shall be not less than 34 inches nor more than 38 inches from the upper surface of the stair rail to the surface of the tread, in line with the face of the riser at the forward edge of the tread.
- 1626(c)(1)(B)(8) Stair rails and handrails shall be so surfaced as to prevent injury to employees from punctures or lacerations, and to prevent snagging of clothing.
- 1626(c)(1)(B)(9) Handrails shall provide an adequate handhold.
- 1626(c)(1)(B)(10) The ends of stair rails, handrails and mid-rails shall be constructed so as not to constitute a projection hazard.
- 1626(c)(1)(B)(11) Handrails that will not be a permanent part of the structure being built shall have a minimum clearance of 3 inches (8 cm) between the handrail and walls, stair rails, and other objects.

In conclusion, the use of wire rope of at least 3/8" diameter would be acceptable as to be used as a stair rails and/or handrails. If used as part of a fall arrest system, detailed engineering data is required to show that the cable can withstand the applicable loads and installation specifications to assure the safety of workers, per section T8 CCR 1670.

Sincerely,



Amit Gupta
Acting Principal Engineer