

State of Oregon Building Codes Division

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Statewide Alternate Method No. OESC 10-01 (Ref.: ORS 455.060)

Issued: November 18, 2010

The Schindler Model 3300 Suspension Traction Media (STM) Elevator

Oregon Elevator Specialty Code, ref. A17.1

- a. Section 2.20.1 Suspension Means
- b. Section 2.18.5.1 Governor Rope Size

Statewide alternate methods are approved by the division administrator in consultation with the appropriate advisory board. The advisory board's review includes technical and scientific facts of the proposal. In addition:

- *Building officials shall approve the use of any material, design or method of construction addressed in a statewide alternate method;*
- *The decision to use a statewide alternate method is at the discretion of the designer; and*
- *Statewide alternate methods do not limit the authority of the building official to consider other proposed alternate methods encompassing the same subject matter.*

Requested by: Schindler Elevator Corporation, Mr. Vince Robibero and Mr. Zack Mitchell

Purpose:

To allow commercial installation of The Schindler Model 3300 Suspension Traction Media (STM) Elevator developed in compliance with ASME A17.1 2009 or other internationally recognized safety standards so that such may be installed in Oregon under alternate method.

Background:

Currently the traction or electric elevators installed in Oregon are done so under ASME A17.1 2007 which allows for wire rope with recognized safety factors to be utilized in the hoisting and suspension of electric traction elevators.



The State of Oregon allowed a composite rope variance for the Otis Elevator Companies Gen2 product line, which has proven to be a safe and reliable product option.

Otis Elevators Company, as well as Schindler Elevator Corporation in this specific case, invested in research and development as well as testing and accreditation for composite rope technology. In both cases AECO (Accredited Elevator/Escalator Certification Organization) provided test accreditation of the composite rope meeting or surpassing the minimum safety requirements for factor of safety.

Under ASME 17.7 and CSA B44 2007, the governing authorities that encompass these code bodies have recognized the need for technological advancement and the control of same under evolving safety code, while 2007 ASME A17.1 has been adopted in the State of Oregon as part of the 2008 Oregon Elevator Specialty Code, there are other standard that can assure elevator safety, such as 2007 ASME A17.7; European Community Standard, or Canadian Standard CSA B44 2007.

In addition pending code changes, such as ASME A17.1 2010, impact manufacturing and delivery aspects which we ask be taken into consideration.

The publication of the ASME A17.7-2007/CSAB44.7-07 Performance Based Safety Code (PBC) for Elevators and Escalators in March 2007 marked a significant milestone in the evolution of the elevator industry in North America. The PBC provides a structured process for allowing innovation while assuring safety and thus maintaining the vitality of the elevator industry. One of the major strengths of the PBC is the certification of products by Accredited Elevator/Escalator Certification Organizations (AECO's). Three prominent organizations, Liftinstituut, TÜV SÜD America and Underwriters Laboratories have been accredited and are committed to the cause of innovation with safety.

The Schindler Model 3300 Suspension Traction Media (STM) Elevator.

Current Applicable Code Citation: ASME A17.1 – 2007 Section 2.20.1 Suspension Means

ASME A17.1 – 2007 Section 2.18.5.1 Governor Rope Size

Technical Discussion:

Under Oregon law, when the division considers making an alternate method ruling on a method of construction, it must consider “standards” and interpretations published by the body that promulgates any nationally recognized model code adopted as a specialty code of this state.” ORS 455.060.

The Technical and Scientific Basis for this Alternate Method: The products composing the Schindler 3300 MRL STM Elevator system have been manufactured, installed and tested under the ANSI A17.1 Certification process including but not limited to Suspension system and governor rope.

The Schindler STMP-PV30-25S-EPDM-42 Non-Circular elastomeric coated steel suspension for elevator application manufactured by MEGADYNE Rubber SA, is certified by Certificate No. 10-0824-1004-002-01 ANSI AECO #0842.

Factor of safety complies with A17.1/B44 2009 requirement 2.20.3 40:1 ratio of steel cord to sheave diameter (105mm minimum).

Field tested in over 60,000 installations since 2005 in Europe and Asia.

The 6mm Governor Steel Rope manufactured by Brugg Drahtseil AG, is certified by Certificate No. 10-0824-1004-02 ANSI AECO #0842.

Factor of safety complies with ASME A17.1/B44 2009 requirements **Section 2.18.5.1 Materials and Factors of Safety**. Reads as follows: Governor ropes shall be made of iron, steel, monel metal, phosphor bronze, or stainless steel. They shall be of regular lay construction and not less than 6 mm (.025 inches) in diameter. The factor of safety of governor ropes shall not be less than 5. Where provided, ropes of a diameter less than 9 mm (0.375 inches) shall have a safety factor of not less than 8 and shall be of a 6, 8 or 9 strand construction. Tiller-rope shall not be used.

Field tested in over 60,000 installations since 2005 in Europe and Asia.

ASME A17.1 Section 2.20.1 Suspension Means: A code proposal to allow composite type hoisting and suspension rope was submitted to the 2009 ASME Commercial Code Committee, and the committee has moved forward with adoption of composite rope technology, and we will be seeing that change as we review the 2010 Code Model for adoption within the State of Oregon in the coming months.

Of note: The composite rope in question is in fact a non-circular elastomeric coated steel suspension system that was designed and tested to the requirements of the 2009 Public Review Draft of ASME A17.6 Section 3 and 2009 Draft A17.1/B44 requirements.

The intent of the rule, considering a factor of safety for the hoisting and suspension of an electric traction elevator is satisfied.

ASME A17.1 Section 2.18.5.1 Governor Rope Size: The 2009 ASME Code committee has moved forward with adoption of governor rope revisions, and we will be seeing that change as we review the 2010 Code Model for adoption within the State of Oregon in the coming months.

Of note: The reduced size 6 mm governor rope, versus current code mandate of 9.5 mm, was designed and tested to the requirements of the 2009 Public Review Draft of ASME A17.6 Section 3 and 2009 Draft A17.1/B44 requirements.

Also of note, the AECO (Accredited Elevator/Escalator Certification Organization) provided test accreditation of the 6mm governor rope meeting or surpassing the minimum safety requirements for factor of safety.

The intent of the rule, considering a factor of safety for governor ropes on an electric traction elevator is satisfied.

Special note:

Until such time as the Schindler Model 3300 MRL with STM is fully compliant with the adopted standard in the State of Oregon, Chief Elevator Inspector Warren Hartung makes the following recommendations:

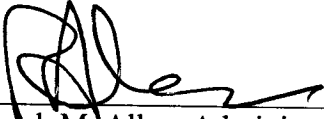
- 1) The maximum rate car speed shall not exceed 150 feet per minute
- 2) The Rated Capacity of the elevator shall not exceed 3500 pounds
- 3) The maximum travel of the elevator car shall not exceed 80 feet.
- 4) This application may not be used outdoors and only installed in environments that are

protected from the weather and maintained within the range of safe operating temperatures of 23 degrees Fahrenheit to 140 degrees Fahrenheit.

Conclusion:

After considering the technical and scientific approval by the Oregon State Electrical and Elevator Board, the division rules that Schindler Elevator Corporation Model 3300 STM Elevator is acceptable as an alternate method, subject to stated limitations, and Alternate Method No. OESC 10-01 is approved.

The recommendation and facts of the Electrical and Elevator Board are accepted and are adopted:



Patrick M. Allen, Administrator
Building Codes Division

12-7-10

November 18, 2009