





Erhaltung von Tragwerken – Stahlbau Maintenance des structures porteuses – Structures en acier Conservazione delle strutture portanti – Costruzioni in acciaio

Existing structures – Steel structures



Reference number SN 505269/3:2011 en

Valid from: 2011-01-01

Published by Swiss Society of Engineers and Architects P.O. Box, CH-8027 Zurich

Any corrections to and comments on this publication can be found at www.sia.ch/korrigenda.

The SIA assumes no liability for any damages which might be caused through the application of this publication.

2016-09 1st Edition

CONTENTS

Page

Foreword 4			
0	Scope	5	
0.1	Limitations	5	
0.2	References	5	
0.3	Deviations	5	
0.0		0	
1	Terminology	6	
1.1	Technical terms	6	
1.2	Symbols	6	
2	Principles	8	
2.1	General	8	
2.2	Examination	8	
3	Materials	9	
3 .1			
		9	
3.2	Old structural steels and cast iron	9	
3.3	Connections	10	
4	Connections	13	
4.1	General	13	
4.2	Riveted connections	13	
4.3	Bolted connections	15	
4.4	Welded connections	15	
5	Structural analysis and verifications	16	
5.1	General	16	
5.2	Basics and modelling	16	
5.3	Cross-sectional resistances	18	
5.4	Stability	20	
5.5	Fatigue	20	
5.5	raugue	21	
6	Condition survey	23	
6.1	General	23	
6.2	Defects	23	
6.3	Deteriorations	24	
7	Interventions	25	
7.1	General	25	
7.2	Riveted connections	25	
7.3	Bolted connections	26	
7.4	Welded connections	26	
7.5	Construction details subjected to fatigue	26	
7.6	Corrosion protection	27	

Appendix

Α	Designation of cast irons and		
	structural steels (normative)	28	
В	3 Fatigue notch categories for riveted		
	details (normative)	29	

FOREWORD

Code SIA 269/3 describes the procedures to be followed in the preservation of structures made of cast iron, iron and steel. It addresses specialists in the preservation of structures as well as owners of construction works and specialists involved in construction management and the execution of construction works.

Code SIA 269/3 forms part of the SIA structural codes relating to the preservation of structures and is supplemented by the following codes:

- Code SIA 269 Existing structures Bases for examination and interventions
- Code SIA 269/1 Existing structures Actions
- Code SIA 269/2 Existing structures Concrete structures
- Code SIA 269/4 Existing structures Composite steel and concrete structures
- Code SIA 269/5 Existing structures Timber structures
- Code SIA 269/6 Existing structures Masonry structures
- Code SIA 269/7 Existing structures Geotechnics.

Technical Specification SIA 2018 continues to apply to the examination of existing buildings with respect to earthquakes. However, it is planned to supplement the codes for existing structures with a Code SIA 269/8 *Existing structures – Seismic aspects*.

Code SIA 269/3 addresses the aspects of preservation of steel structures that are not covered by Codes SIA 263 and 263/1.

Codes SIA 269 Project Management Team and Working Group SIA 269/3

Abbreviations of organisations represented in the commission SIA 263

EPFL	Swiss Federal Institute of Technology, Lausanne
ETH Zürich	Swiss Federal Institute of Technology, Zurich
SBB	Swiss Federal Railways
SZS	Swiss Institute of Steel Construction

Project Management – Codes for Existing Structures

Dr. Paul Lüchinger, dipl. Ing. ETH, Zurich (chairman) Prof. Dr. Eugen Brühwiler, dipl. Ing. ETH, Lausanne Thomas P. Lang, dipl. Ing. ETH, Berne Prof. Thomas Vogel, dipl. Ing. ETH, Zurich

Working Group SIA 269/3 Existing structures – Steel structures

Prof. Dr. Alain Nussbaumer, dipl. Ing. ETH, Lausanne (chairman) Pierre Bays, dipl. Ing. ETH, Montreux André Flückiger, dipl. Ing. ETH, Echallens Dr. Senta C. Haldimann-Sturm, dipl. Ing. ETH, Berne Jean-Jacques Reber, dipl. Ing. ETH, Lausanne Tamar Sommerstein, dipl. Ing. ETH, Lausanne Dr. Michel Thomann, dipl. Ing. ETH, Lausanne

Commission SIA 263 "Steel structures"

President	Prof. Dr. Alain Nussbaumer, dipl. Ing. ETH, Lausanne	EPFL
Vice-pres.	Dr. Hans Tschamper, dipl. Ing. ETH, Zurich	Consulting Engineer
Members	Ruedi Aepli, dipl. Ing. ETH, Gossau/SG Pierre Bays, dipl. Ing. ETH, Montreux Prof. Dr. Mario Fontana, dipl. Ing. ETH, Zurich André Flückiger, dipl. Ing. ETH, Yverdon Christoph Gemperle, dipl. Ing. ETH, Wil Urs Kern, dipl. Ing. ETH, Frauenfeld Jean-Jacques Reber, dipl. Ing. ETH, Lausanne Werner Rinderknecht, dipl. Ing. ETH, Lucerne Stephan Zingg, dipl. Ing. ETH, Zurich	Industry Consulting Engineer ETH Zürich University of Applied Sciences Consulting Engineer Industry SBB University of Applied Sciences SZS

Approval and validity

The SIA's central committee for codes and regulations approved the present Code SIA 269/3 on 23rd November 2010. It is valid as from 1st January 2011.

All rights are reserved, including the right to print extracts, partial or full reproduction (photocopy, microcopy, CD-ROM, etc.), storage in data processing systems and translation.

Copyright © 2011 by SIA Zurich