

# **Forensic Engineering 2022**

## **Collaborative Reporting for Safer Structures**

Proceedings of the Ninth Congress on Forensic Engineering

Denver, Colorado, USA  
4 – 7 November 2022

### **Editors:**

**Rui Liu**  
**Carmen C. Mulea**

**M. Kevin Parfit**  
**Tara L. Cavalline**

ISBN: 978-1-7138-6261-1

**Printed from e-media with permission by:**

Curran Associates, Inc.  
57 Morehouse Lane  
Red Hook, NY 12571



**Some format issues inherent in the e-media version may also appear in this print version.**

Copyright© (2022) by American Society of Civil Engineers  
All rights reserved.

Printed with permission by Curran Associates, Inc. (2023)

For permission requests, please contact American Society of Civil Engineers  
at the address below.

American Society of Civil Engineers  
1801 Alexander Bell Drive  
Reston, VA 20191  
USA

Phone: (800) 548-2723  
Fax: (703) 295-6333

[www.asce.org](http://www.asce.org)

**Additional copies of this publication are available from:**

Curran Associates, Inc.  
57 Morehouse Lane  
Red Hook, NY 12571 USA  
Phone: 845-758-0400  
Fax: 845-758-2633  
Email: [curran@proceedings.com](mailto:curran@proceedings.com)  
Web: [www.proceedings.com](http://www.proceedings.com)

# Contents

<b>The Decade of Disaster .....</b>	<b>1</b>
Glenn R. Bell	
<b>The Formation, Development, and Future of CROSS .....</b>	<b>12</b>
Alastair Soane	
<b>CROSS Influence on Codes and Standards of Practice .....</b>	<b>23</b>
James Robert Harris	
<b>Enhanced and Expanded CROSS .....</b>	<b>29</b>
Paul McNulty and Paul Livesey	
<b>Development of CROSS in the United States .....</b>	<b>40</b>
Andrew W. Herrmann	
<b>Structural Safety and Failure Case Studies in Germany .....</b>	<b>44</b>
Robert Hertle and Thomas Hertle	
<b>Development of CROSS in Australasia.....</b>	<b>55</b>
Michael W. Fordyce and Peter Ho	
<b>Confidential Reporting for Fire Safety .....</b>	<b>64</b>
Neil Gibbins	
<b>The Need for Fire Safety Performance-Based Design in an Increasingly Prescriptive Environment .....</b>	<b>74</b>
Nathan B. Wittasek	