PIPELINES 2023

Planning and Design

PROCEEDINGS OF SESSIONS OF THE PIPELINES 2023 CONFERENCE

> August 12–16, 2023 San Antonio, Texas

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EDITED BY Christine S. Ellenberger, P.E. Jonathan D. Shirk, P.E.





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Preface

The resiliency and sustainability of pipeline infrastructure is becoming more recognized as a major issue in maintaining the high level of service we are all accustomed too. These pipelines provide a vital role in our everyday life from supplying drinking water to collecting wastewater, conveyance of petroleum products and other fluids (or for some cases solids as well), we depend greatly on pipelines. This year the theme, "Advancing Solutions for Resilient and Sustainable Infrastructure and Asset Management," focuses on the need for engineers to be innovative in their designs while at the same time providing resilient and sustainable solutions to our aging pipeline infrastructure.

In coordination with the American Society of Civil Engineers, the technical program and this publication were planned, developed, and arranged by the Technical Program Committee, led by the Technical Program Co-Chairs. A call for abstracts was made from which 270 abstracts were submitted. These abstracts were reviewed and sorted into tracks based on the general topic areas of Planning and Design; Construction and Rehabilitation; Condition Assessment; and Utility Engineering, Surveying, and Multidiscipline. This resulted in a high-quality program containing 169 papers and an array of poster presentations.

The overall program was further enhanced by eight technical pre-conference workshops covering: Large Diameter Pipeline User's Forum; Large Equipment Owner's Forum; Field Investigation Techniques & Interpretation for the ASCE-38 Standard; Force Main Rehabilitation; 50 Years of Success – Steel Pipe Review of Standards and Design; Direct Steerable Pipe Thrusting Manual of Practice; A Comprehensive Look at Municipal Installations of PVC and HDPE: Updates on Best Practices for Designing, Handling, and Installing Trenchless; and Manhole Rehabilitation and Inspection – 3rd Edition of Manual of Practice. A Pipeline Research Symposium was also part of the pre-conference offerings.

In addition to the traditional technical paper presentations, poster submissions, and the preconference workshops, panel sessions were included covering a wide range of topics, such as the evolving technology used in geomatics and surveying, use of risk assessment in asset management, ethics, and diversity in engineering.

For publication purposes, technical papers from the seven presentation tracks were consolidated into the following three volumes:

- 1. Pipelines 2023: Planning and Design
- 2. Pipelines 2023: Construction and Rehabilitation
- 3. Pipelines 2023: Condition Assessment, Utility Engineering, Surveying, and Multidiscipline

On behalf of the Technical Program Committee, we are pleased to offer you the Proceedings of the ASCE/UESI Pipelines 2023 Conference, "Advancing Solutions for Resilient and Sustainable Infrastructure and Asset Management."

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Respectfully yours,

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Jon Robison, P.E., M.ASCE – Direct Steerable Pipe Thrusting Manual of Practice

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Joanne Carroll, Aff.M.ASCE – Manhole Rehabilitation and Inspection – 3rd Edition of Manual of Practice 92

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The Technical Program Co-Chairs and the Steering Committee would like to thank the over 100 professionals who volunteered their time and talents to serve as part of the 2023 Technical Committee. Everyone worked as a team to review abstracts, papers, and posters and continued to collaborate throughout the development and fine-tuning of this year's technical program, *Advancing Solutions for Resilient and Sustainable Infrastructure and Asset Management*. Many of the technical committee members also served as Track Chairs and Moderators for the conference.

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The Technical Program Co-Chairs also thank the authors and exhibitors for their dedication to the industry in presenting at this conference. Without your efforts and contributions, the UESI Pipelines Conference would not be possible.

Webb Winston

And lastly, the Technical Program Co-Chairs express special thanks to Mark Mihm and Andrea Beymer, Conference Co-Chairs, and the Steering Committee for their efforts and leadership during the planning and execution of Pipelines 2023 Conference.

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