



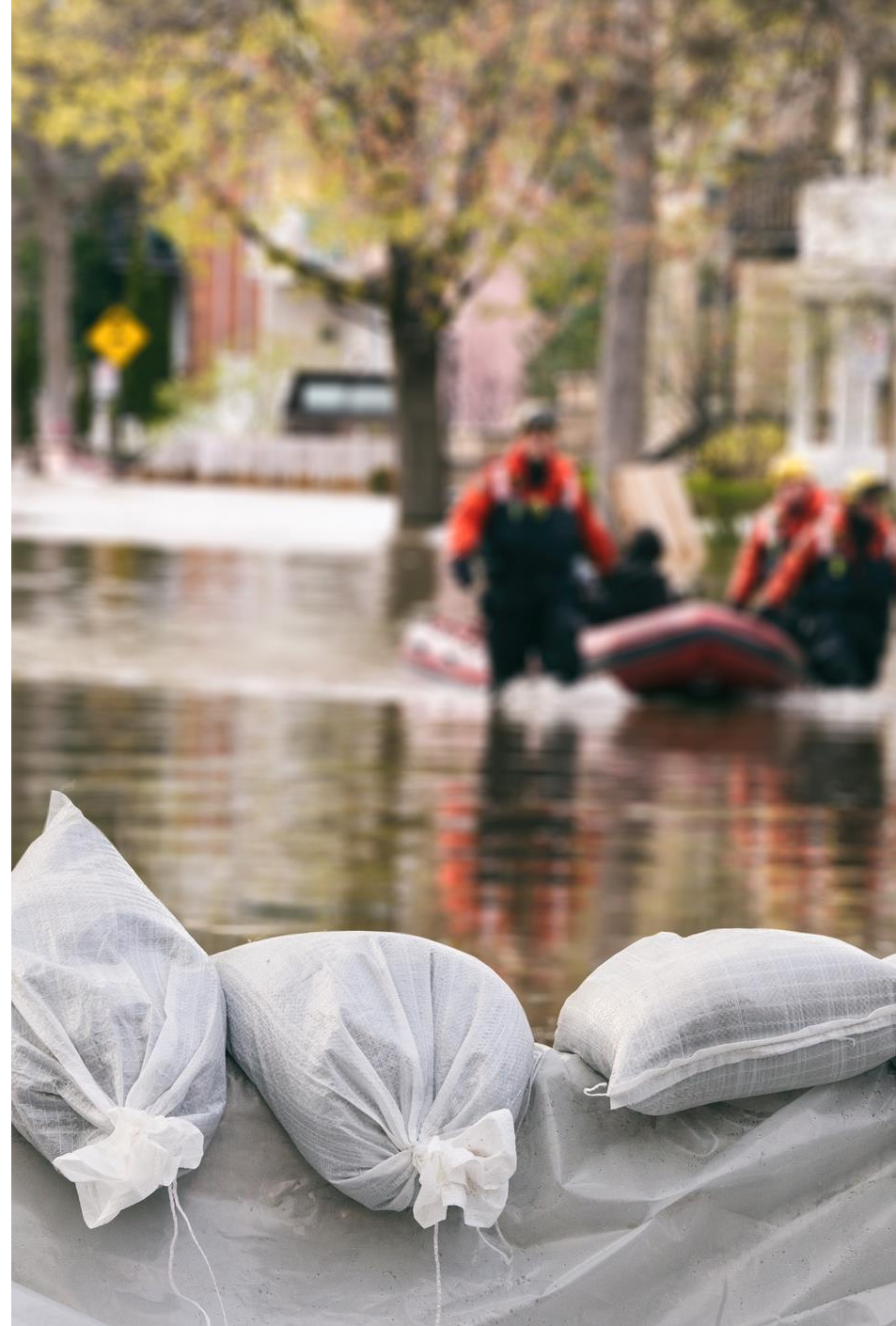
FEBRUARY 12, 2020

Enhancing Resilience Through Standards

Dwayne Torrey, Director of Construction & Infrastructure Standards, CSA Group

The Challenges with Enhancing Resiliency

- What does resilient mean?
- Where do I turn to for expertise?
- Am I getting the right (and consistent) advice?
- What if approaches evolve?
- Can we defend our resiliency decisions?

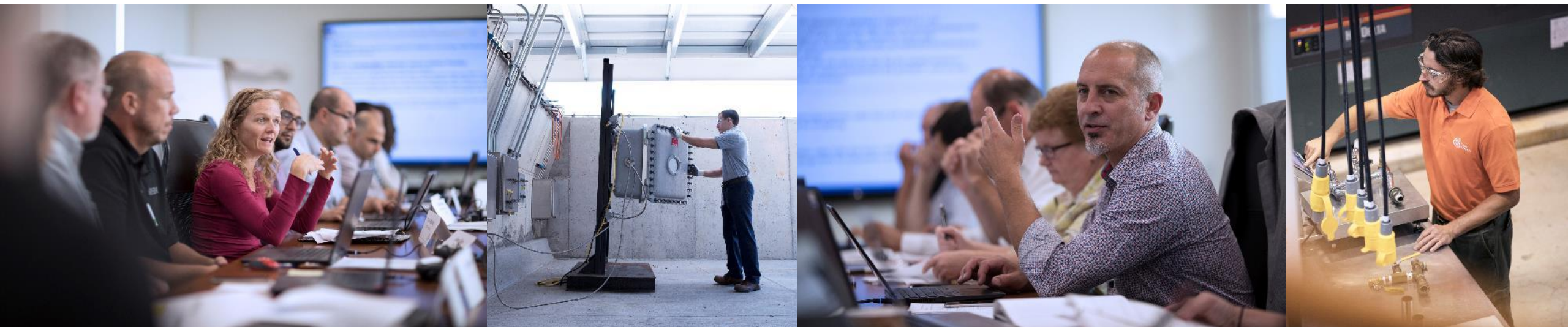




HOLDING THE FUTURE TO A HIGHER STANDARD

Impact of Standards

CSA Group



2,000
Employees

10,000
Members

+3,000
Standards

39
Offices

+13
Countries



HOLDING THE FUTURE TO A HIGHER STANDARD

Standards & Codes

Construction & Infrastructure

Electrical

Environment & Natural Resources

Fuels & Transportation

Health Care & Well-being

Information & Communication Technology

Management Systems

Mechanical & Industrial Equipment

Nuclear

Occupational Health & Safety

Petroleum & Natural Gas

Public Safety

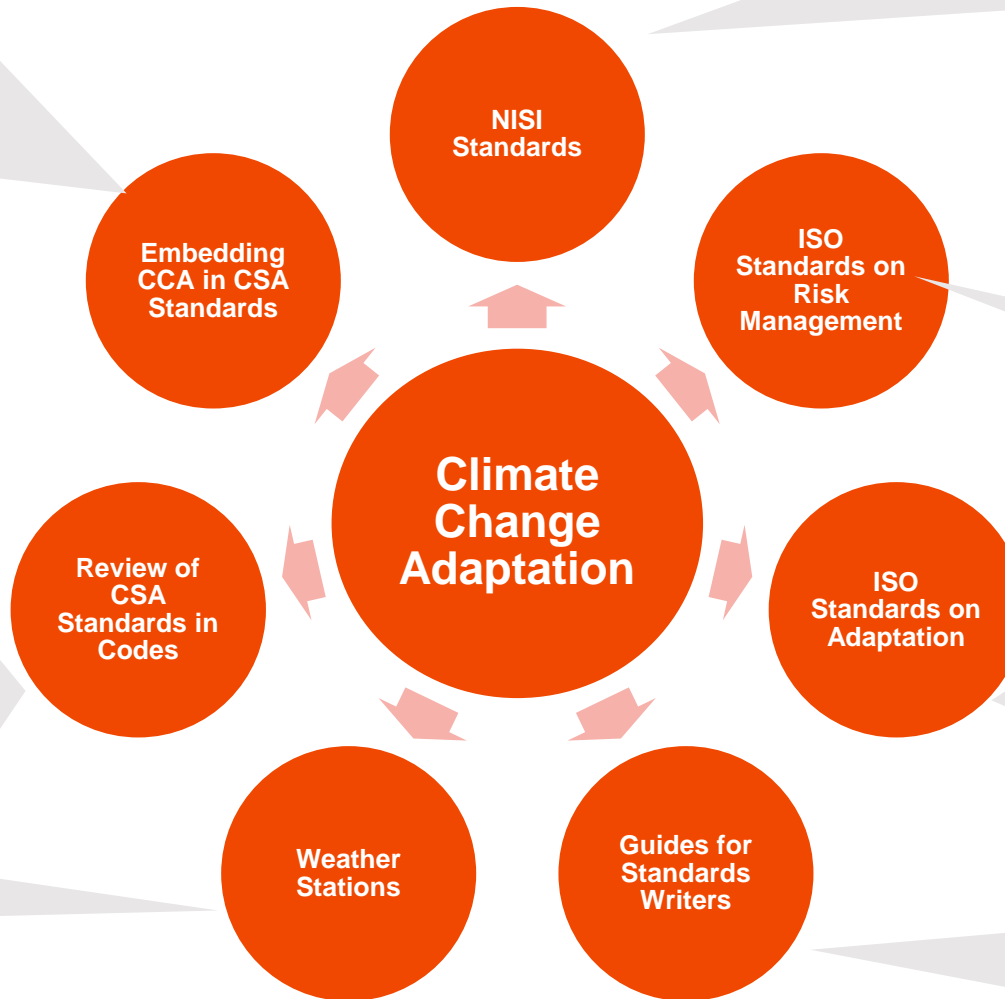
Our Work in Climate Change Adaptation

Examples:

- Design and Construction of Bioretention Infrastructure Systems
- Basement Flooding
- Development, Interpretation and Use of IDF Curves
- Bridge Code, Canadian Electrical Code

Outcomes:

- 81 CSA standards in need of CCA provisions
- 10 high priority standards that should be updated first
- Developing 4 new standards on weather stations, and weather station data quality and reporting



Examples:

- Erosion Protection in Permafrost
- Wastewater Treatment Lagoons
- Infrastructure in Permafrost
- Dealing with High Winds as it Pertains to Northern Infrastructure
- Solid Waste Sites

- CSA ISO 31000 Risk Management Systems
- CAN/CSA ISO/IEC 31010 Risk Assessment Techniques

- ISO 14090 Principles, Requirements and Guidance
- ISO 14091 Vulnerability Assessment

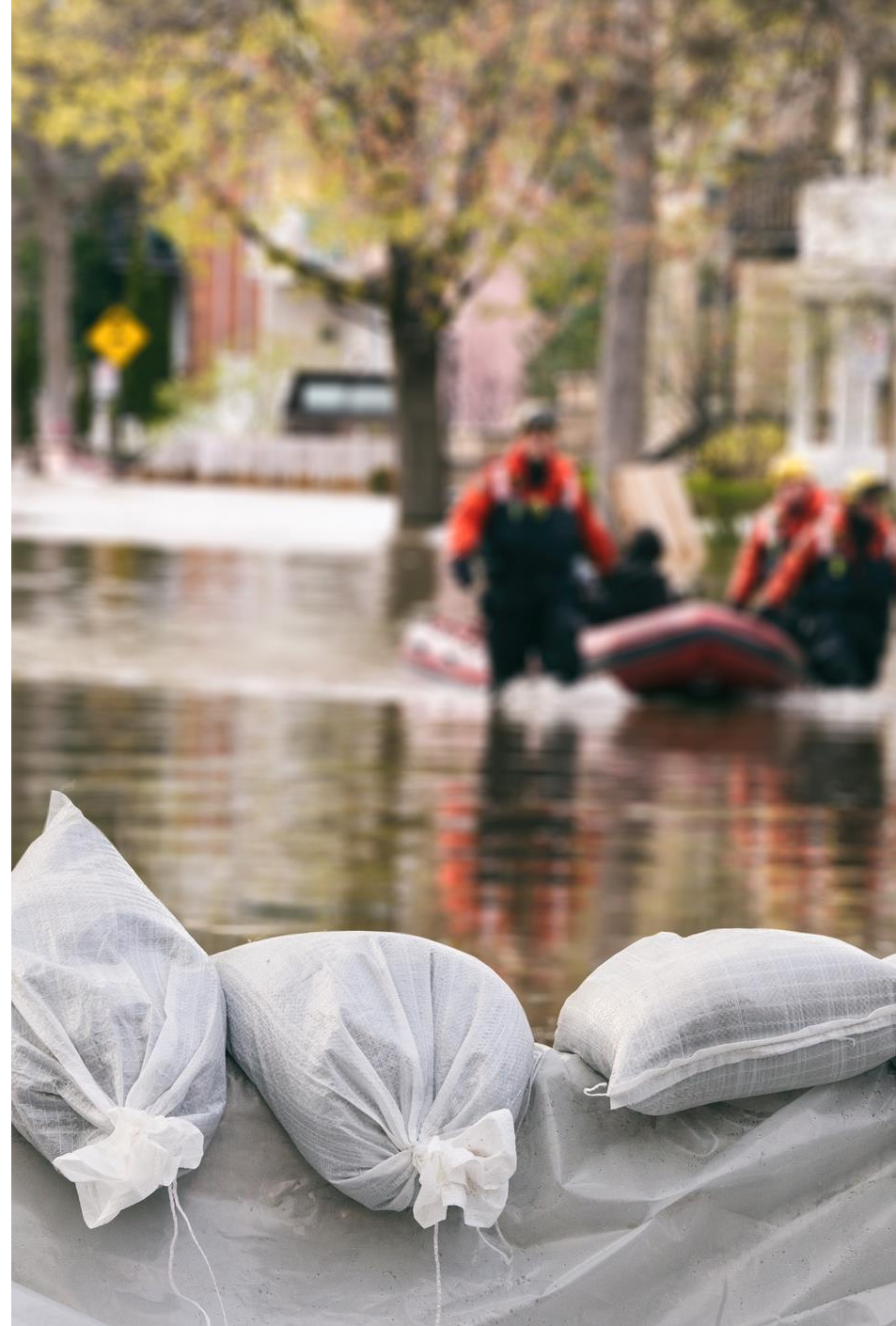
- ISO Guide 84 (publishing in 2020)
- SCC Guide on Addressing Climate Change Adaptation in Standards for Canada



Managing Floods

Managing Floods

- Bioretention Systems (CSA W200/W201)
- Flood Resilient Design
 - New Residential Communities (CSA W204)
 - Existing Residential Communities (*In Development*)
- Erosion Protection for Northern Infrastructure (CSA W205)
- Basement flood protection (CSA Z800)
- Stormwater management (*In Development*)
- Community drainage in northern communities (CSA S503)





More Resilient Buildings and Infrastructure

More Resilient Buildings and Infrastructure

Buildings

- Durability (CSA S478)
- Basement flood protection (CSA Z800)
- Resilient building materials (roofing, windows, masonry)
- Fire resilient planning for northern communities (CSA S504)
- High winds (CSA S505)



More Resilient Buildings and Infrastructure

Infrastructure

- Canadian Electrical Code (CSA C22.1)
- Antenna Towers (CSA S37)
- Wastewater Treatment Plants (CSA S900.1)
- Canadian Highway Bridge Design Code (CSA S6)
- Vulnerability of assets



Key Takeaways

- Resiliency solutions are continuously evolving;
- CSA standards are developed by experts across Canada;
- Accredited processes ensures CSA standards are defensible;
- Referencing CSA standards directly allows municipalities to free up resources to focus on municipally-specific priorities;
- CSA standards continue to evolve with the latest research, ensuring requirements stay current;
- Builders, engineers and regulators trust CSA standards;
- CSA is a recognized Canadian company developing safety standards for over 100 years



Thank you.

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