Presentation to the IGSHPA Standards Committee: ANSI /CSA C448- Series 2016, Design and installation of ground source heat pump systems for commercial and residential buildings - Binational Standard March 13, 2017

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What and why?

• About CSA Group
• Committee members representing
  • Utilities
  • Drillers
  • Installers
  • Manufacturers
  • Regulators
  • Designers / engineers
  • Researchers / academia
Did You Know ..... 

Key Facts About CSA Group

- Established in 1919
- Independent, not-for-profit
- Global leader in standards development and product testing, inspection & certification
- 9,000+ volunteer members
- 1,300 Technical Committees
- 1,800 employees
- 38 offices in 15 countries
- 35,000+ customers
- 3,000+ standards, codes & related products addressing a range of technologies & industries
Supporting a Full Spectrum of Solutions

Open-Source:
- Workshop agreements
- Seed documents

Structured:
- Express documents
- Guidelines

Accredited:
- Full-consensus standards
Current Stakeholders

- Alderson Engineering
- Manitoba Hydro
- Geoflex Systems
- Beatty Geothermal
- Waterfurnace Intl.
- ISCO Industries
- Asheville Geothermal
- US EPA
- Pretech
- Geothermal National & International
- Groundheat International Inc.
- Ewbank Geo Testing
- Earth Tech
- Newcomb-Boyd
- Versaprofiles
- Waterloo Energy Products
- Watts Water Technologies
- Geo-Flo Products
- Bergerson Caswell
- Plastic Pipe Institute
- GEOoptimize Inc.
- NAIT

- Rehau Incorporated
- R. Mancini & Associates
- NGWA
- Meline Engineering Corp.
- CM Engineering
- IGSPHA Canada
- HRAI
- Viega LLC
- Water Energy
- EarthLinked Technologies
- GeoEnergy Enterprises
- Image Engineering Group
- Uponor, Ltd
- HydroGeoPro
- P.W. Grosser
- Natural Resources Canada
- Oklahoma State University
- Allied Well Drilling
- Decagon Devices
- Government of Manitoba
- IGSHPA - Stillwater
- Ontario Ministry of Environment
Scope

Performance & Best Practices based requirements:
• equipment and material selection
• site survey – geological and hydrogeological
• open and closed loop geothermal design / engineering
• direct expansion (DX) systems, Standing Column
• installation
• testing and verification
• documentation
• commissioning and decommissioning
• future considerations
C448 – Continuing Development

• Flexibility
• New technologies
  – Piping / Piping materials
  – Grouting materials
  – Unique HEX configurations
  – Protection of Groundwater
The New Standard has 9 sections as follows:

- C448.0 - 16 – General Requirements for all systems including a vocabulary
- C448.1 - 16 – Commercial / Institutional Applications
- C488.2 - 16 – Residential / Small Commercial Applications
- C448.3 - 16 – Vertical GHX Configurations
- C448.4 - 16 – Horizontal Configurations
- C448.5 - 16 – Submerged Closed Configurations
- C448.6 - 16 – Open Configurations
- C448.7 - 16 – Standing Column Wells
- C448.8 - 16 – Direct Expansion (DX) Configurations
Committee Structure

Technical Committee on C448

- System Sizing – Design & Engineering
- Piping, Materials & Installation Methodology
- Backfill and Grouting
- Horizontal and Angled Drilled Systems
- Vertical Borehole Construction
On – going Upgrades & Mandates

- References
- Further consistency in definitions
- Broadly use performance based approach throughout
- Providing the a process for new technology integration
- Incorporate feedback from users
Ongoing initiatives and next steps...

- IGSPHA training to include C448-16
- Ongoing collaboration between U.S. and Canadian Stakeholders and Industry Experts
- Pending proposal for C448 reference in IAPMO USEHC
- Pending proposals for C448 reference in ASHRAE  90.1 & 189.1 (IGCC)
Next Steps

• Solicit interest and commitment from Industry members in participating in the next revision of the ANSI / CSA C448 Binational Standard - *Design and installation of ground source heat pump systems for commercial and residential buildings* – applications are now open

• Applications / Nominations for the Vice – Chair of the ANSI / CSA Technical Committee

• Review and survey all existing voting and non – voting committee members for their interest and commitment to continue to serve

• Examine and discuss third party certification of Industry training and certification of personnel
Bi national C448 benefits
Questions?
Thank You

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