

From the Desk of Maysoun Ismaiel...



According to the data from Statistics Canada, Saskatchewan secured the second position for year-over-year and month-over-month growth in investment in building construction in October 2023 (seasonal adjustments) ⁽¹⁾. In October 2023, investment in building construction surged by 24.7 percent compared to the same month in 2022, surpassing the national average of -5.5 percent by a significant margin. Additionally, there was a 9.5 percent increase in investment from September 2023 to October 2023. Moreover, statistics show remarkable progress on the construction front, with urban housing starts in Saskatchewan soaring by 108.2 percent in November 2023 compared to November 2022, placing the province in the second position nationally ⁽²⁾.

In light of the increased construction activity within the province, Saskatchewan Masonry Institute (SMI)

continues to represent the interests of the local masonry industry and promote the use of masonry wall systems and the benefits that masonry wall systems bring in terms of long-term durability, resiliency, and the local economy. Additionally, SMI continues to be a dedicated supporter of The Bricklayer Apprenticeship Programs in Saskatchewan. These programs are vital, especially considering the high demand for skilled tradespeople in our construction sector. Bricklayers are among the top in-demand skilled trades in Saskatchewan, and the construction industry offers abundant employment opportunities for them. As we advance through the vibrant construction arena, SMI stands as a pillar of support, nurturing growth, and sustainability within the masonry industry. We're committed to shaping a prosperous future for our sector, and we extend our gratitude to all involved in these efforts, from our members to partners and beyond.

The Canada Masonry Design Center (CMDC) remains dedicated to bridging the gap between the design community and the masonry construction industry. The CMDC mission involves providing technical support to design professionals and pushing the boundaries of Masonry Design. In addition to our core responsibility of addressing masonry-related technical inquiries from design professionals across Canada and furthering the development of MASS software, the CMDC team has been diligently engaged in several pivotal initiatives. Here's a glimpse into the latest developments at CMDC:

References and resources for more information

(1) Table 34-10-0286-01 Investment in building construction. DOI: <https://doi.org/10.25318/3410028601-eng>

(2) <https://www.saskatchewan.ca/government/news-and-media/2023/december/18/saskatchewan-setting-the-pace-in-building-construction>

- *CMDC Staffing:* The CMDC office in BC is presently operational, and we welcomed Jawdat Alfarra, M.Sc., to the CMDC team in January 2024 in Vancouver.
- *CMDC Website:* The CMDC Website has been updated with new calculators, research links, and a questions and answers page addressing common inquiries received by the CMDC staff. A French translation is now available for the CMDC website, with plans underway to determine a new French logo. CMDC is also available to revise project specifications and drawings upon request.
- *MASS software and the design Textbook:* Over the last 12 months, there have been 602 active licenses for MASS, and version 4.2 has been released. Plans for the next release include integrating the 2020 NBC, 2024 CSA S304/2025 NBC, and adding new features for Whole Building Design. Additionally, the second edition of the masonry textbook is now printed and available.
- *National Conference Sponsorship/Attendance by CMDC 2024:* CMDC's engagement in national conferences includes sponsorship and attendance at key events:
 - Engineers: CSCE Canadian Society of Civil Engineering from June 5-7, 2024, in Niagara Falls, ON, sponsored with a booth.
 - Specifiers: CSC Construction Specifications Canada from May 22-26, 2024, in Montreal, QC, with local staff attendance.
 - Architects: RAIC Royal Architectural Institute of Canada from May 14-18, 2024, in Vancouver, BC, sponsored with a booth.
 - Additionally, preparations are underway for the 2025 Canadian Masonry Symposium, scheduled after CMCA from June 2-5, 2025, at Carleton University, involving significant preparations and work in 2024.
- *Codes and Standards:* CMDC is actively involved in Codes and Standards activities, particularly in NBC Parts 4 and 9. The CSA S304 has been officially approved and is set to be published in May, featuring changes in various topics such as seismic design and the design of masonry veneers.
- *University Research:* The current university research initiatives focus on these areas:
 - GHG/Carbon/ Life Cycle Assessment – Materials, Assemblies & Walls
 - Energy/Thermal/Envelope – Materials, Assemblies & Walls
 - Seismic/Extreme Loads – Assemblies, Walls & Buildings
 - Construction – Wind/Cold/Labour/Training

The objectives of these research projects include code adaption, changes to standards, utilization in the field, and a geographically diverse network. New research projects have been accepted, including studies on construction, cold weather impacts, and thermal monitoring, with several ongoing projects across various universities in Canada.

Exciting News from the CMDC! We're thrilled to invite you to explore the latest in Masonry Design with us. Join our series of lunch and learn events tailored to support design professionals. Attend our informative lunch and learn sessions to discover updates in our new masonry design textbook. Plus, don't miss our engaging summer seminars covering captivating topics like the path to Net Zero. Stay tuned for forthcoming announcements with all the juicy details!

Saskatchewan Centre for Masonry Design



Maysoun Ismaiel, Ph.D., E.I.T., Masonry Design Co-ordinator, CMDC, offering a presentation to Roanne Kelln, P.Eng. and the fourth year engineering students at the University of Saskatchewan

We extend our sincere gratitude to Roanne Kelln, P.Eng., for hosting the Canada Masonry Design Centre once again at the University of Saskatchewan. The recent guest presentation for fourth-year engineering students marked an exciting opportunity to delve into the realm of innovative design software, MASS, and its application in masonry design. This time, our focus was centered on showcasing our design software, MASS, and its practical application in shear wall design. Witnessing the students' genuine enthusiasm as they explored the potential of integrating masonry design software into their coursework was truly inspiring.

We firmly believe that integrating such tools into the classroom environment is essential for equipping stu-

dents with the skills necessary for success in their future endeavors within the industry. In an arena where expertise in masonry design is a rare commodity, it becomes increasingly crucial for students to distinguish themselves by mastering masonry design skills and software applications during their undergraduate studies.

Our presentation aimed to fill this gap, providing students with practical knowledge that will undoubtedly make them stand out in their careers. We are thrilled to play a part in empowering the next generation of engineering professionals with the tools and expertise needed to thrive in the dynamic field of the engineering industry.



Will Pahl, graduate of the University of Saskatchewan, College of Engineering

Let's extend our heartfelt congratulations to Will Pahl, who graduates from the University of Saskatchewan this spring with a degree in civil engineering. Adding to his impressive achievements, Will has been honored with a prestigious 2024-2025 ACI Foundation Fellowship. This esteemed fellowship, granted to high-potential students, serves to inspire and support their careers. Alongside the grant received from the foundation, Will Pahl will have the privilege of attending two ACI conventions with all expenses covered.

We are thrilled to welcome Will into the Saskatchewan Center of Masonry Design as he embarks on his M.Sc. journey this fall. Under the supervision of Dr. Lisa Feldman, head of the Department of Civil, Geological and Environmental Engineering, Will's research will focus on out-of-plane shear of concrete masonry walls.

As Will prepares to immerse himself in this pivotal research, we eagerly anticipate the invaluable contributions he will make to the masonry industry. Join us in extending our best wishes to Will as he embarks

on this exciting chapter, filled with promise and potential for groundbreaking advancements in the field.

As we warmly welcome new students to the Saskatchewan Center of Masonry Design, it's also a time to extend heartfelt congratulations to those marking significant milestones in their academic journeys.

We are delighted to share the news of Micah Heide's recent graduation. Micah, an M.Sc. student under the supervision of Dr. Lisa Feldman, successfully completed his program in December 2023. Currently, Micah is diligently preparing a journal paper that discusses his extensive research work. We're thrilled to hear of his continued dedication to advancing the field of masonry.

As Micah embarks on the next chapter of his career, now working in Colorado, we reflect on his valuable contributions to the masonry field during his research with the Saskatchewan Center of Masonry Design. We extend our sincerest congratulations to Micah on his well-deserved graduation and express



Micah Heide, graduate of the University of Saskatchewan, College of Engineering

our heartfelt wishes for his continued success in all his future endeavors.

Graduate student recruitment continues under the dedicated efforts of Dr. Lisa Feldman, who is spearheading innovative masonry research topics. Dr.

Feldman's invaluable contributions to the field of masonry are widely recognized, and we eagerly anticipate even greater success in the future. We extend our heartfelt thanks to Dr. Feldman for her tireless dedication and unwavering commitment to advancing the field of masonry.



SMI's Annual Golf Tournaments

Mark your calendars!

Planning is underway for SMI's Annual Golf Tournaments. Please join us for a BBQ lunch and an afternoon of golf followed by a reception in the clubhouse.

The Regina golf tournament will be held at Royal Regina Golf Club on Thursday, July 25, 2024.

The Saskatoon golf tournament will be held at Riverside Country Club on Thursday, August 22, 2024.

Registration forms will be sent out soon!

2024 Provincial Skills Competition—Bricklaying

On March 22, 2024, Skills Canada Saskatchewan held their bricklaying provincial competition in Regina, SK where the union apprentices showcased their talents. The purpose of the challenge was to complete the masonry project, as per issued drawings using skills and knowledge they have gained from technical training and job site experiences.

The Gold Medal was awarded to Kyler Nieman, Union Apprentice with Brxton Masonry, Silver Medal was awarded to Adrien Bigchild, Union Apprentice

with City Masonry Group, and the Bronze Medal was awarded to Trenton Fullerton, Union Apprentice with Brxton Masonry. The medalists received Home Depot gift cards donated by SMI - congratulations to the winners!

For more information on bricklaying, please see the link below:

<https://www.skillscanadasask.com/skills-profiles/construction/bricklaying/>



Gold Medal

Kyler Nieman



Silver Medal

Adrien Bigchild



Bronze Medal

Trenton Fullerton

Enhancing Constructability and Cost Efficiency

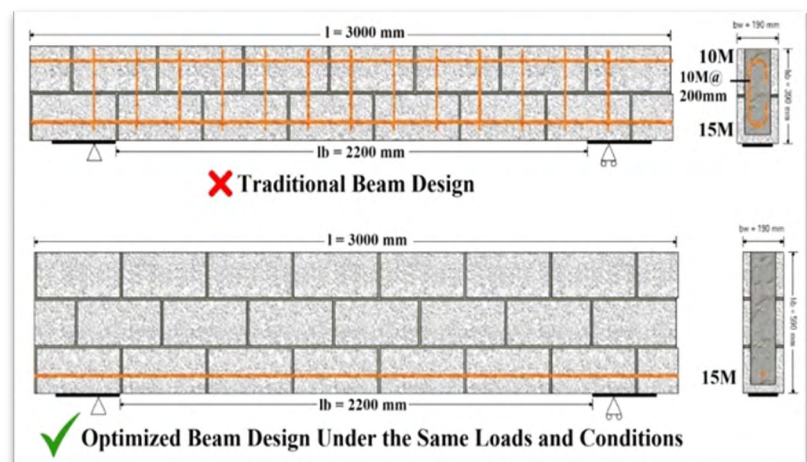
Optimizing Masonry Beams

In the realm of masonry construction, the integration of stirrups into masonry beams is holding us back, influencing both the pace of construction and overall project costs. Their installation demands meticulous attention to detail and precise placement, often resulting in a slowdown of construction progress. Yet, by adopting alternative design approaches and sidestepping the complexities associated with stirrup incorporation, construction endeavors can achieve heightened efficiency, ensuring smoother project execution while bolstering cost effectiveness.

Traditional masonry design practices offer significant potential for optimization in material utilization. One particularly effective strategy involves optimizing masonry beam designs specifically for shear forces. **By increasing the height of beams**, designers can enhance shear capacity, potentially **negating the need for steel stirrups** without compromising structural integrity. However, it's worth noting that this optimization strategy is contingent upon the absence of obstructions above masonry beams, such as openings or restrictions imposed by floor slabs.

The advantages of optimizing masonry beam design extend far beyond material reduction alone; they encompass substantial cost savings, streamlined construction processes, and a minimized environmental footprint. In partnership with CMPA, the Canada Masonry Design Center introduces the MASS software, a robust tool tailored for the analysis and design of masonry structural elements. Aligned with Canadian Codes and Standards like CSA S304-14, the MASS software's beam module automates engineering calculations for moment, deflection, shear, and bearing, delivering efficient and precise results. By inputting parameters such as opening and beam geometry, and applying un-factored loads, engineers can expedite design processes with MASS™, fostering the exploration of design alternatives and conserving valuable design time.

In the face of pressing environmental challenges, engineers and designers play a pivotal role in resource management. Their expertise is instrumental in devising strategies that not only optimize construction processes but also preserve and safeguard our environment for future generations.



Concrete Masonry

The Sound Solution

Did you know that concrete masonry is an excellent material for noise control? Concrete masonry walls, known for their strength and durability, play a crucial role in creating structures resistant to sound. Let's delve into how concrete masonry achieves sound control and its implications for construction.

Sound Transmission Class (STC) is a vital metric used to assess the sound insulation capabilities of materials and assemblies. The higher the STC rating, the better the material is at preventing the passage of sound. For most applications, STC ratings of 45 to 50 are acceptable, but higher ratings may be preferred for specific areas like washrooms or healthcare facilities. A Hollow 20 cm, Type A or B, concrete block provides an STC of 50. The weight of a wall directly influences its STC value, with heavier CMU walls typically having higher ratings. Proper construction techniques, such as solidly filling mortar joints, further enhance a wall's ability to block sound.



In porous and open-textured CMU walls, sound becomes trapped within small pores, contributing to sound absorption. Tests performed at different frequencies define the sound absorption coefficient, ultimately yielding a coefficient factor such as Noise Reduction Coefficient (NRC) or Sound Absorption Average (SAA). NRC values for average textured unpainted CMU (coarse, medium, fine), Type C or D, range between 0.40 to 0.50. Surface texture and porosity significantly impact a material's sound absorption attributes, with more porous and open-textured surfaces absorbing more sound.

Designers have various options to leverage the transmission loss and absorption properties of concrete masonry based on project requirements. These options range from using regular concrete block units with or without insulation and surface finishes to employing acoustical concrete masonry units.

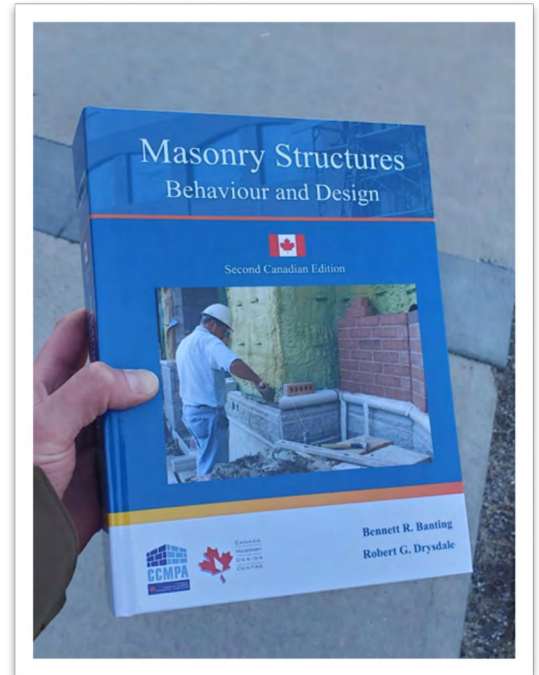
Concrete masonry emerges as a versatile solution for achieving sound control in construction projects, offering both strength and functionality.

The New Textbook Is Finally Here!

Hot Off the Press

This book was written for the Canadian Design and Construction markets to aid in the effective use of masonry as a modern form of construction. The new version has been completely updated to a practical engineering audience. The majority of the content relates to structural applications, but there is substantial information related to planning, building materials, the building envelope, and construction that is of direct interest to architects and builders. Those familiar with basic reinforced concrete design may more readily understand the material related to structural design content.

This comprehensive coverage of masonry extends from ancient forms of construction to current usage. It provides a broad introduction to design involving planning, materials science, and structural design with an explanation of design load requirements, building envelope design, and construction-related issues. This fundamental behaviour of masonry is covered in this textbook and is the basis upon which design in accordance with **CSA S304-14 “Design of Masonry Structures”** is introduced. A copy of the CSA S304-14 Standard is included at the back of the book.



New MASS Release

Version 4.2 is Now Available for Download

What's New in MASS Software?

Comprehensive Analysis for Conventional Construction Shear Walls: Delve deeper into your designs with the ability to perform comprehensive analyses on conventional construction walls with a seismic hazard greater than 0.35. This enhancement allows for a more thorough understanding of structural behavior, ensuring robust and resilient designs.

Enhanced Shear Deformation Calculation: Experience more accurate deflection assessments with our newly integrated shear deformation component in deflection design. This enhancement empowers designers to fine tune their structures with precision, resulting in optimized performance and increased reliability.

Elevate your masonry design endeavors with the latest advancements in MASS software. Embrace innovation and unlock new possibilities in your projects today!





CMDC is Here to Help

Send Us Your Technical Questions



Whether it be for engineers, architects, masonry contractor members, or researchers, CMDC offers complimentary, informed, expert advice on everything masonry. We are here to help ensure you feel comfortable, informed, and educated about your masonry projects.

CMDC is funded by our member contractors, however, our engineering staff are here to provide objective and technically accurate advice to all eligible parties. CMDC does not, however, provide engineering consulting services, but rather, will work with designers and contractor members to resolve technical challenges, interpret standards clauses, handle unique detailing challenges, mitigate possible job site conflicts, or otherwise share our wealth of expertise in masonry materials, design, and construction.

CMDC engineering staff are located in offices around the country and are available through phone, video call, email correspondence, or site visits when necessary.

