Existing Masonry Guidelines Summit

Project Description

The Existing Masonry Guidelines (EMG) Task Group of The Masonry Society's Existing Masonry Committee is planning a group summit in the first quarter of 2024. This 4-day long summit of 12 key technical personnel from the United States and 4 key personnel from Canada will serve as an intensive collaborative effort aimed at producing a comprehensive first draft of guidelines for existing masonry, written in mandatory language with non-mandatory commentary. This draft will be submitted to TMS's Existing Masonry Committee and will be subjected to the rigorous balloting and public comment process following TMS rules. If supported, the draft will be fine-tuned into a mandatory language standard for Existing Masonry, similar to TMS 402/602 for new construction and similar to ACI 562 for concrete. Once completed, TMS would suggest it for possible adoption into the *International Existing Building Code* (IEBC), and for cross-reference in other standards, such as ASCE 41.

This summit project is intended to serve as a catalyst to efficiently define the minimum standard of care for existing masonry structures through the development of a pre-standard, which will serve to assist in efficiently drafting a consensus standard that is typically an extremely long and difficult process. Additionally, the draft document will reduce the likelihood of other organizations perhaps developing provisions without adequate input from the masonry industry. Because mason contractors are essential in evaluating, repairing, and restoring existing masonry structures, their views and opinions are needed in this effort, as any guidelines or standards will affect their work.

Total expenses for the summit are budgeted at more than $40,000, which includes costs associated with travel, lodging, meals, administrative and coordinator support. Attendees will participate in a volunteer capacity. The Masonry Society has agreed to fund this project, but we are requesting financial assistance from industry and corporate sponsors, not only to reduce the burden on TMS, but to raise awareness and support for this important effort and engaging key stakeholders such as MCAA.

Project Objectives

Primary Summit Objective

Create a first draft (pre-standard) of *Code Requirements for Assessment, Repair, Rehabilitation, Restoration, Retrofit, and Preservation of Existing Masonry Structures* written in mandatory language and modeled after ACI 562 by expanding the content outline developed over the past two years by the Existing Masonry Guidelines Task Group.

Secondary Summit Objectives

- Develop a set of robust but thoughtful and practical guidelines broadly applicable to the many typologies of existing masonry.
- Leverage wealth of technical knowledge and practical experience from a diverse team of experts.
- Foster knowledge transfer from experienced engineers/contractors to rising engineers/contractors for continuity and growth.

- Utilize TMS as an approved ANSI Standards Developing Organization to develop appropriate criteria for existing masonry which, through TMS's past successes in the Code arena, may be considered favorably for Code adoption.

Tertiary Summit Objectives

- Foster continued harmonization of US and Canadian masonry codes as Canada begins work on developing an existing building code by the year 2030.
- Continue coordination with ASCE 41, *Seismic Evaluation and Retrofit of Existing Buildings*, Chapters 6 and 11, for streamlined content related to the design of seismic retrofits of existing masonry buildings.

Background

The IEBC continues to be expanded and is increasingly adopted. While it does not focus specifically on masonry, it does include requirements that affect masonry projects, especially through references to ASCE 41 for seismic retrofits. Both the IEBC and ASCE 41 have considered existing masonry proposals, and have sought standards on existing masonry assessment and repair. TMS 402/602, *Building Code Requirements for Masonry Structures*, applies only to new construction. Despite this, both the IEBC and ASCE 41 have considered referencing portions of TMS 402/602 for lack of more appropriate standards. Recently, because TMS members have identified that this inappropriate due to differences in materials and construction in new masonry versus historic and existing masonry, ASCE 41 has considered and proposed existing masonry-specific provisions. However, ASCE 41 provisions were primarily developed for resistance to earthquakes – but are reportedly being applied for all masonry due to the lack of an existing masonry standard. This leaves the engineers who perform condition and damage assessments of, and design repairs to, existing masonry structures to operate on an engineering judgment basis, seasoned by experience. A consensus standard for existing masonry would define the minimum standard of care for evaluating, repairing, and strengthening masonry and provide an enforceable means of ensuring public safety.

Over the last two years, the EMG Task Group to The Masonry Society's Existing Masonry Committee, has met regularly to define the scope of this document and develop a content outline with the goal of publishing a comprehensive draft document for formal Technical Activities Committee (TAC) review by 2026. The Task Group is on schedule, currently reviewing model codes from other countries and incorporating feedback received from an international audience at the recent 14th North American Masonry Conference into the charging language for each proposed chapter.

The comparable effort in the concrete community – to produce ACI 562*, Code Requirements for Assessment, Repair, and Rehabilitation of Existing Concrete Structures* – took over 20 years to develop before finally receiving ICC adoption in spring 2022. Learning from this experience, and recognizing that the unfunded approach by the Masonry Joint Standards Committee's (MSJC) Strengthening, Repair and Rehabilitation (SRR) committee in the late 90's to 2001 was unsuccessful, the Task Group agrees that the most efficient path towards creating an Existing Masonry Code is to first develop a comprehensive pre-standard for existing masonry, and then present this draft to a balanced committee to officially ballot as a new standard on *Assessment, Repair, and Rehabilitation* of Existing Masonry.

Scope of Project

The deliverable of the EMG Summit is a pre-standard related to the *Assessment, Repair, Rehabilitation, Restoration, Retrofit, and Preservation of Existing Masonry Structures* submitted to the Existing Masonry Committee ahead of the October, 2024, TMS meetings. Following the conclusion of the summit, the EMG Task Group will persist in their efforts, potentially generating additional outcomes such as conference publications, articles in technical periodicals, and presentations. It is important to note that these deliverables lie outside the immediate scope of the EMG Summit itself.

Anticipated Impact

Ideally, the pre-standard will transition to a consensus standard that then is adopted by the IEBC. However, this project will still yield meaningful results that could affect all existing masonry structures in the nation, even if the proposed standard is not adopted by the IEBC. ACI 562 addressed this issue by creating an appendix that allows for the use of its content without code adoption. Similarly, the EMG Task Group proposes to include an Appendix titled "Criteria as a Stand-Alone Code" within the pre-standard to provide local municipalities and states with a mechanism for adopting the provisions ahead of ICC approval.

Additionally, this project also holds significance on an international scale, fostering ongoing harmonization between US and Canadian masonry codes. By working together to develop the guidelines, we will also lay the groundwork for Canada's planned standard and create a reference point for other countries worldwide.

Summary of Qualifications

The Masonry Society is a not-for-profit, membership driven professional organization dedicated to the advancement of scientific, engineering, architectural, and construction knowledge of masonry. This summit supports TMS's mission to advance masonry knowledge, its development and application.

Leadership

Heather Sustersic, Senior Structural Engineer at Colby Company Engineering and EMG Task Group leader, will serve as Summit Coordinator. Ms. Sustersic was one of 7 professionals selected to represent the US in the CANUS masonry code harmonization project in 2019 and currently serves TMS as Chair of the Reinforcement and Connectors subcommittee to TMS 402/602, an at-large representative to the Board of Directors, and as a voting member on the following committees: TMS 402/602 Main, TMS 402/602 Structural Members, Existing Masonry Committee, and TMS Executive Committee. Her experience includes 3 years as a Research Associate on joint appointment between the Architectural Engineering and Civil Engineering departments at The Pennsylvania State University and over 13 years of professional design experience on new and existing structures, including renovation and retrofitting of existing masonry structures.

Administrative Support

Administrative support will be provided by Colby Company Engineering's administrative staff in cooperation with TMS staff and Canada Masonry Design Centre staff. Colby Co.'s team has professional experience with event planning, public relations, and marketing for multi-day events for professional societies, national corporations, and non-profit groups. This team of five professionals has the depth and expertise to plan and execute the Existing Masonry Guidelines Summit while adhering to the budget, scope, and schedule set forth by the EMG Task Group.

EMG Task Group Team Members

To date, the following individuals have served on the EMG Task Group and have provided meaningful contributions to its work. This group represents diverse levels of experience, expertise, and perspectives from all TMS Zones, as indicated.

Name	Affiliation	TMS Zone
Mike Schueller, PE	Atkinson-Noland Associates	2
Patrick Dillion, PE, PhD	WDP & Associates	3
Meera Ramesh, PE, PhD	Ryan Biggs/Clark Davis	3
Craig Bennett, PE	Bennett Preservation Engineering	4
Amy Lamb Woods, PE	International Masonry Institute	3
Tom Elliot	International Masonry Institute	3
Larry Kahn, PE, PhD	Georgia Institute of Technology	4
Jordan Dick, PE	Simpson Gumpertz & Heger	3
Can Simsir, PE, PhD	Walker Consultants	1
David Biggs, PE	Biggs Consulting Engineering, PLLC	3
Tina Subasic, PE	C. Callista Subasic	4

Other individuals have expressed interest in contributing to the effort. Contractor involvement is needed. If space allows, additional qualified individuals may attend at their own expense. Please note that this list is subject to change pending participant availability, once Summit details (location, dates, etc.) are finalized.

Budget

As noted above, while TMS has agreed to fund this effort, several organizations have offered to help financially support the effort to reduce the overall burden on TMS, while also showing their support for the effort. Such support will help us move forward on this effort quickly and efficiently, and hopefully it will reflexively provide positive exposure to organizations supporting the effort. We hope that MCAA agrees that this project is of great importance and will support it, be involved in the development, and generously contribute to its success.

Expenses for Existing Masonry Guidelines (EMG) Development Summit*			
	Unit Cost	Qty	Total
Summit Coordinator & Administrative Support *Coordinator Support Before/During/After: 80 hours @ $130/hour* *Administrative Support Before/During: 80 hours @ $65/hour*	$15,600.00	1	$15,600.00
Summit Travel	$600.00	13‡	$7,800.00
Summit Lodging *2 lodges w/ individual rooms for 13‡ people*	$6,000.00	2	$12,000.00
Standards/Resources *Hardcopies of ACI 562, ASCE 41, TMS 402/602 for reference (if needed)*	$200.00	6	$1,200.00
Food and Beverages *$70/day for 5 days for 13‡ people*	$4,550.00	1	$4,550.00
Rental Vehicle (Passenger van, 6 days)	$1,200.00	1	$1,200.00
TOTAL *Anticipated funding sources: TMS, APT, NCPTT, MCAA, corporate and industry sponsors*			**$42,350.00***

*This is the budget for US attendees only. Canada Masonry Design Centre will provide funding for its Canadian delegates separately.

‡ Includes 12 key technical personnel and 1 administrative support person

Requested Payments

The preferred distribution of funds one lump sum payment in April, 2024, following summit completion and the spring TMS meetings.

Other Funding Sources

In addition to support from TMS and MCAA, the EMG Task Group is soliciting corporate and industry sponsorships in $500, $1000, and $2000 increments as well as applying for grant funding from the *National Center for Preservation Technology and Training* (NCPTT) and *The Association for Preservation Technology International* (APT). We understand that many organizations are recovering from the Covid-19 pandemic and may be limited in their ability to contribute.

Reporting Schedule

MCAA Masonry Foundation will receive two brief reports prior to the summit, one in November, 2023, and the other in February, 2024, outlining summit planning progress. A final report describing the summit itself will be sent to MCAA in April, 2024.

Timing

The EMG Summit fits into the overall EMG Task Group schedule as follows:

- October 2021 – EMG Task Group formed
- 2022 – Develop approach with overall content outline. Populate scope content for each chapter. Author papers for NAMC to solicit feedback (completed).
- 2023 – Present approach at NAMC and incorporate feedback (completed); solicit funding for Summit from corporate and industry sponsors (in progress)
- **February-March 2024 – Host four-day EMG Summit to write first draft**
- April 2024 – Virtual TMS meetings; share progress with Task Group and parent Existing Masonry Committee
- June-September 2024 – Summit Coordinator compile chapters and prepare first draft for circulation
- October 2024 – Share first draft with parent Existing Masonry Committee for feedback
- 2025 – Document development with Task Group and parent Existing Masonry Committee
- 2026 – Formally ballot document with parent Existing Masonry Committee and submit for TAC review

Draft Summit Schedule

	8:30 AM – 5:30 PM each day
Wednesday	Arrivals in afternoon
	Kickoff dinner/orientation
Thursday	AM – full group meeting
	Code writing crash course: examples, establish tone/tense, grammar coordination
	PM – small groups work on individual chapters
	Progress reports to full group
Friday	AM – short full group meeting to refocus
	All day – small groups work on individual chapters
	Progress reports to full group
Saturday	AM – short full group meeting to refocus
	All day – small groups work on individual chapters
	Progress reports to full group
Sunday	AM – start later to respect religious practices
	All day – small groups wrap up work on individual chapters
	PM – report back to full group
	Full group meeting: establish Action Items and due dates
Monday	Departure in morning

Frequently Asked Question Responses

Does the project address a major challenge facing the industry?

Currently, engineers designing repairs and alterations to existing masonry structures assume full liability for their designs. The existence of a consensus standard would provide an umbrella of protection for engineers and also an enforceable means of quality control during construction. Data collected by the American Institute of Architects (AIA) indicates that more than 50% of architectural firm billings are due to renovation work. According to International Masonry Institute's (IMI) understanding of marked trend hours, approximately 25% of masonry construction falls under repair and restoration – that number does not include new brick and block, tile, marble, or terrazzo that are often used in restoration and renovation projects. As mindfulness of sustainability and resiliency continues to increase, the desire to renovate existing buildings instead of replacing them will only increase. Resources for existing masonry abound but are scattered and enforceable provisions only exist for seismic retrofits. This project would help move the industry towards addressing these challenges.

Are the goals and objectives and the plans and procedures for achieving them well-developed, worthwhile, and realistic?

A summit approach to code development is a proven method that generates actionable results. The CANUS code harmonization project in 2019 immediately illuminated differences in design methodologies between TMS 402/602 and CSA S304 that prompted code changes in both countries. TMS 402/602-2022 incorporated most of the proposed changes, with similar results for CSA S304. NCMA led a Veneer summit that led to the extensive revisions to TMS 402/602 Chapter 13. A Direct Design summit jumpstarted NCMA's Direct Design Software that helps contractors across the nation. The goal of producing a first draft at the summit is ambitious, but achievable when broken down chapter by chapter. Because the summit deliverable is a draft that will be sent for review and balloting, we fully expect there to be iterative edits at the Existing Masonry Committee level after the summit concludes, which frees participants to develop content to the best of their ability during the summit.

Is the project informed by research in teaching and learning, current issues, what others have done, and relevant literature?

During the recent 14th North American Masonry Conference in Omaha, Nebraska, EMG Task Group members spoke with representatives from Europe (United Kingdom, Switzerland, Italy, Germany, Portugal), Asia (India), New Zealand, Australia, Canada, and Africa (Egypt), among others, to understand what standards other countries have in place for existing masonry. We are currently reviewing the masonry codes for these countries to identify best practices to incorporate into the proposed pre-standard, meeting in September to discuss and update our content outline accordingly. Most nations have existing masonry provisions for seismic retrofit, but not for the remainder of existing masonry structures. Further, the Task Group authored two peer-reviewed papers summarizing progress to date and presented results at the 14th NAMC.

Does the project have the potential to provide fundamental improvements in teaching and/or learning through effective uses of technology?

Not directly; there is potential for the document to address post-installed anchors and stabilization methods, opening the door for product development.

Is the project led by and supported by the involvement of capable, trained professionals who have recent and relevant experience? Is the project supported by adequate facilities and resources, and by an institutional and department commitment?

This project is fully supported by The Masonry Society. The summit will be administered and attended by experienced professionals with demonstrated capability to execute this work.

What are the broader impacts of the proposed outcomes?

It's important to recognize that the term "existing" does not just apply to old, historic structures. It also applies to structures built 10, 40, or even 3 years ago. Many people do not recognize that TMS 402/602 does not apply to existing construction and use it to design renovations which may be inappropriate. This work will affect *all* existing masonry structures in the United States.

To what extent will the results of the project contribute to the improvement of the masonry industry as a whole?

Not all engineers are well-versed in the design of new masonry structures, let alone existing masonry structures. This document will define the minimum standard of care that is required when dealing with existing masonry structures and hold designers accountable. Properly designed and executed masonry repairs will lead to longer-lasting masonry structures, improving resiliency and making masonry more attractive as a building material to owners and facilities personnel.

Are the plans for evaluation of the project appropriate and adequate?

Progress reports are scheduled to be sent 1) after the participant list and venue are finalized, 2) right before the summit occurs and final preparations are nearing completion, and 3) after the summit. These milestones are appropriate for the timing of the summit and for keeping MCAA informed of progress. Additional updates will be available upon request.

Are the results of the project likely to be useful nation-wide?

Absolutely! If adopted, the content contained in this draft document could affect all existing masonry structures in the United States, with a ripple impact in Canada and possibly other countries.

Is all budget information included? Is it complete and unambiguous?

The budget does not include compensation for participants' time but is otherwise complete and transparent. Costs borne by the Canadian contingent are not included and will be managed by the Canada Masonry Design Centre.

Is the cost of the project realistic?

EMG Summit costs are appropriate and consistent with CANUS Summit costs when scaled for duration, number of attendees, and recent travel cost increases due to inflation.

How will the progress of the project be measured and reported?

Completion of the EMG Summit and production of a first draft to the Existing Masonry Committee will be quiet indicators of the project's success. Because the work will be the result of a Task Group and not a balanced committee, it would be inappropriate to publish or market the draft prior to balloting at the Existing Masonry Committee. Assuming that consensus is reached on edits to the draft document, a public comment version will be available following TMS rules prior to finalizing a proposed standard for publication.

How will the requested funds be needed, i.e., will start-up funds be needed, how are payments requested?

TMS has provided start-up funds, so payment in the form of a lump sum after the summit is acceptable.