MIOSHA Fact Sheet

Masonry Wall Bracing – Part 2
Questions and Answers

These Q and As are designed to provide information related to Construction Standard Part 2 – Masonry Wall Bracing. The Michigan Occupational Safety and Health Act 154, as amended, require employers to comply with safety and health standards promulgated by MIOSHA. However, this document is not itself a standard or regulation, and it creates no new legal obligations.

I. RULE 203 - DEFINITIONS.

Question 1a: What do you mean by "final lateral support"?
Answer: Final lateral support means that the wall and its final connections are capable of transferring the design level wind load to the structure as determined by a qualified person. An unsupported masonry wall obtains its final later support from structural elements, including roofs, floors, buttresses, crosswalls, piers, trusses and decking.

Question 1b: Is this only the bar joists or is the decking or other structural elements required to be in place too?
Answer: Buildings in Michigan are typically designed to withstand a 90 mph basic wind speed upon completion. According to Rule 211 (1) a wall bracing system shall be designed by qualified person and capable of providing stability to the wall for a wind speed of 40 mph. In some circumstances, bar joists may be adequate to act as the temporary wall bracing. In other building designs, the decking or other structural elements may also be required. Each circumstance would need to be evaluated by a qualified person. The restricted zone and signage may not be removed until the final structural elements are in place.

Question 1c: Is an engineer stamp required to determine if the final lateral support system is in place?
Answer: No. A qualified person (see definition, Rule 203 (6)) can make the determination that the building elements have met the final lateral support.

Question 2: Masonry box structures used to form elevator shafts and stairwells are fairly stable structures and aren't likely to be in danger of blowing over due to wind. It seems like the final attachment to the structure wouldn't make that much of a difference for stability in this situation. Do these types of structures require temporary bracing?
Answer: Although a masonry shaft with four connecting corners would seem to have adequate strength and be less likely of blowing over, only a qualified person can determine this. The qualified person must consider the soil type and conditions, type and depth of footings, wall to footing connection, and other aspects of the wall design in order to evaluate whether the shaft has reached its final lateral support.

Each structural design is unique and must be reviewed by a qualified person to determine the stability and strength of the structure, i.e., a masonry constructed elevator shaft or stairwell, constructed in a manner that interconnects the wall at the corners could be considered supported masonry walls and as a result may not require wall bracing, but still may require a restricted zone.

II. RULE 204 – RESPONSIBILITIES; RESTRICTED ZONE, WALL BRACING SYSTEM, AND SIGNAGE.

Question 3a: Can the mason contractor give written notice in general terms to the controlling contractor stating that all the masonry walls on the architectural plans will have restricted zones and refer to the project schedule as to when the masons plan to lay block or does the notification need to be more specific?
Answer: No, the written notice must be specific as to which walls will require a restricted zone. This is so the controlling contractor can notify the other trades who might be impacted by the restricted zone layout and be prepared with the appropriate training. The notice will also assist the controlling contractor with overall coordination of the jobsite. The layout of the restricted zone signs is important because during those times that the mason is not on the site, others can properly maintain them and have them in the correct position.

Question 3b: Can the notification be sent via email or fax?
Answer: Yes.

III. RULE 205 – TRAINING REQUIREMENTS.

Question 4a: I attended a training session for entering restricted zones that was sponsored by the masonry industry. Does this training and my 20+ years of experience in the construction industry meet the definition of a "qualified person"?
Answer: There are two levels of training requirements in Part 2.

Level One training is required for employees who are involved in installing, altering, repairing, maintaining or inspecting the wall bracing system and restricted zones as prescribed in Rule 205(2). This training consists of a high level of training from a qualified person who is knowledgeable in masonry wall bracing systems and requirements, and restricted zone requirements.

Level Two training is required for any employee who enters a restricted zone of a masonry wall under construction as prescribed in Rule 205(3). The qualified person providing this training will enable employees to recognize and understand the general nature of hazards associated with walls under construction. This level of training does not require the higher level of training that is required of Level One employees.

It is reasonable to assume that you may meet the definition of a "qualified person" for the Level Two training and could provide training to other employees for entering a restricted zone.

However, a "qualified person" for the Level One training must have a higher level of knowledge and experience – either by a recognized degree, certificate, professional standing, or by extensive knowledge, training, and experience, has successfully demonstrated the ability to solve or resolve problems related to the subject matter, the work, or the project.

Question 4b: If I do qualify, can I train my employees and other trades on entering a restricted zone?
Answer: Yes. However, each employer who has employees entering a restricted zone is responsible for determining the competency of the qualified person providing the training.

Question 5a: Who is responsible for training visitors, i.e. owner, estimator, delivery person?
Answer: Each employer is responsible for ensuring that their employees have received training by a qualified person to enter a restricted zone. Any person who has not received this training is not allowed to enter a restricted zone.

Question 5b: Is a trained employee allowed to escort visitors into the restricted zones?
Answer: No. See answer 6a.

Question 6a: How often are employers required to provide restricted zone training to their employees?
Answer: Employers are required to provide only the initial training to any new employee as prescribed in Rule 205(3), or verify that the employee has been previously trained as prescribed in Rule 205 (5), for an employee who enters a restricted zone unless there are any other pertinent requirements (see Rule 205 (3)(g)). Rule 205(4) requires that employers provide additional training to employees when changes at the worksite present a hazard about which an employee has not been previously trained and when changes in the types of wall bracing systems present a hazard for which an employee has not been previously trained.

Question 6b: Does this mean that the employer is required to provide additional restricted zone training for each specific work site?
Answer: No. Additional training is not required unless there are changes at the worksite and/or when changes in the types of wall bracing systems present a hazard about which an employee has not been previously trained.

Question 7: Is an employer in compliance if their employee has received training in accordance with 205(2) to install, alter, repair, maintain, or inspect the wall bracing system and restricted zone bracing design, but is not familiar with the specific wall bracing system plan on a jobsite?
Answer: No. Rule 205(4) requires the employer to provide additional training to an employee when changes at the worksite present a hazard about which an employee has not been previously trained and when changes in the types of wall bracing systems present a hazard for which an employee has not been previously trained.

Question 8: My employees don't speak English. Are employers required to provide training in the language that their employees speak or understand?
Answer: Yes. Employers are required to provide training in the language that their employees can understand.

IV. RULE 206 – RESTRICTED ZONE REQUIREMENTS.

Question 9a: Rule 206(1) states: "For walls greater than 8 feet in height, a restricted zone shall be established prior to the start of the construction of the wall." What does "prior to the start of the construction of the wall" mean?
Answer: The restricted zone is not required until the wall is greater than 8 feet in height. It is our opinion that "established prior to the start" was an implied reference to Rule 204 (1) where the mason contractor shall notify in writing the controlling contractor where and when a restricted zone will exist.

Question 9b: Does a restricted zone need to be established before laying the first course of block?
Answer: No.

Question 10: Are workers required to evacuate the restricted zone when the wind speed exceeds 20 mph (initial period) even when they are laying the first course of a wall that is going to be greater than 8 feet tall?
Answer: No. The restricted zone is not required until the wall is greater than 8 feet in height, therefore workers would not be required to evacuate until the wall is greater than 8 feet high.

Question 11: Are restricted zones required to be set up based on the final height of the wall or can the restricted zone be moved out as more block is laid? Example: On Day 1- the restricted zone is set up 13 feet from a wall that was being built to 9 feet high. On Day 2, the restricted zone is moved out to 18 feet and another 5 feet of block is laid.
Answer: Restricted zones are not required to be set up based on the final height of the wall and can be moved outward as the wall under construction is being built higher. The employer should ensure that employees are aware of any changes to the restricted zone.

Question 12: Is a restricted zone required to be set up around a masonry elevator shaft under construction?
Answer: A restricted zone may be required to be set up around a masonry elevator shaft under construction until the walls have reached their final lateral support as determined by a qualified person.

V. RULE 207 – SIGNING REQUIREMENTS.

Question 13: Is there a height requirement for the danger signs that are used to delineate the restricted zones and for posting on the walls?
Answer: No. The only requirement is that the signs are not blocked from view, can be readily seen by workers and in a legible condition.

VI. RULE 208 – WIND SPEED; DETERMINATION BY COMPETENT PERSON.

Question 14: Rule 208 talks about taking wind measurements in the vicinity of the masonry wall. Define vicinity.
Answer: Wind speed measurements should be taken on site in the areas of the affected walls on the worksite. These locations will vary depending on the conditions of the jobsite as determined by a competent person.

Question 15a: Is the competent person required to take several wind speed measurements throughout the day?
Answer: The competent person may need to take several wind speed measurements throughout the day if conditions warrant it. For example, there will be situations when the wind speed is higher at the top of the wall which may be in the initial period where employees are to evacuate at wind speeds greater than 20 mph or another situation when the interior walls could be subjected to greater wind speed due to a "chimney stack effect" where wind is generated and funneled through the building from the elevator shaft or other openings in the building. Each situation is unique to the conditions of the jobsite.

When conditions are such that wind speed measurements are not as critical, i.e. no wind or very light wind, the competent person may determine that wind speed measurements may only need to be taken at the start of the shift. The competent person who monitors wind speed must be trained, experienced, and capable of identifying existing or potential hazards associated with wind speed and take the necessary action to evacuate employees when the wind speed exceeds 20 mph in the initial period or exceeds 35 mph in the intermediate period.

Question 15b: Is written documentation required?
Answer: Part 2 does not require the wind measurements to be documented.

Question 16: If the wind speed exceeds the limits, how long do employees have to stay out of the restricted zone?
Answer: All employees must stay out of the restricted zone until the wind speed is less than 20 mph (initial period) or 35 mph (intermediate period), as applicable, and the walls have been inspected for visible defects by a competent person from each contractor having employees working in the restricted zone.

Question 17: Can a subcontractor employer rely on the mason contractor or the controlling employer to monitor the wind speed?
Answer: No. It is the subcontractor's responsibility to ensure that the wind speed is being monitored at the affected areas where their employees are working. There may be times when the mason contractor or the controlling employer have left for the day or are not at the jobsite -- leaving the subcontractor without a monitor, then each subcontractor is required to have an employee at the site that is trained as a competent

person to monitor wind speeds and supplied with a wind meter in order to always be in compliance with Rule 208.

A monitoring procedure may be established for the jobsite. The procedure must include a method of monitoring the wind speed and alerting all workers within the restricted zone when the wind speed has been exceeded.

VII. RULE 209 – INITIAL PERIOD REQUIREMENTS.

Question 18: Rule 209(3) states: "At the end of the initial period, the wall shall be braced on both sides if it exceeds the unbraced wall heights as shown in Table 2." Do walls have to be braced if we use Table 3 and evacuate the restricted zone at 20 mph?
Answer: No, walls do not have to be braced if using Table 3 and evacuating the restricted zone at 20 mph. Rule 210 (3) was added to provide a level of safety when bracing cannot be installed.

Question 19: How can a subcontractor determine whether the masonry walls under construction are in the initial period or intermediate period in order to determine which wind speed to use?
Answer: The subcontractor's competent person for wind monitoring must contact the mason contractor or controlling contractor to determine the wind speed which requires evacuation. If ever in doubt, the competent person must use the initial period wind speed and evacuate their employees from the restricted zone at wind speeds greater than 20 mph.

VIII. RULE 210 – INTERMEDIATE PERIOD REQUIREMENTS.

Question 20: Rule 210(1) states: "When the height of an unbraced masonry wall exceeds the maximum height as shown in Table 2 during the intermediate period, the masonry wall shall be braced on both sides." However, Part 2 also uses the Masonry Wallbracing Design Handbook as an approved guide to bracing systems and uses one sided bracing systems in their examples. Are the one sided bracing systems in compliance?
Answer: Yes, when used with a bracing plan in accordance with Rule 211(2)(b).

IX. RULE 211 – WALL BRACING DESIGN.

Question 21: The charts located on pages 33 – 48 in Appendix A in Standard Practice for Bracing Masonry Walls Under Construction are not specifically listed in Part 2. Are employers allowed to use these charts?
Answer: Appendix A in Standard Practice for Bracing Masonry Walls Under Construction show sample solutions to a number of design conditions. It is not intended that these designs replace engineered masonry bracing designs. In the majority of site conditions, bracing should be designed by a qualified person. Appendix A will assist in making decisions in how and when to brace.

Question 22: An employer was laying block from a scaffold with an enclosure that was designed and engineered for a 35 mph wind. The walls were reinforced and grouted in 4 foot lifts. The wall was in the initial period and was within the enclosure and not exposed to wind. Could we evacuate at 35 mph in this scenario instead of 20 mph?
Answer: Maybe. There are several factors that would need to be evaluated to ensure that the wind enclosure was fully preventing wind from entering. Some factors to evaluate are:

- Is the enclosure really keeping the wind out or is some amount of wind entering the enclosure?
- Can the opening of the enclosure doors create a wind tunnel or vacuum that increases wind speed at the wall?

- The capacity and integrity of the enclosure would have to be evaluated to determine its strength and effectiveness of keeping wind out.
- Is it a complete enclosure or partial enclosure?

Question 23a: Would the use of horizontal spanning wall panels or horizontal bond beams eliminate the need for additional internal or external bracing?
Answer: A qualified person would have to determine whether additional bracing would be required.

Question 23b: Would a bracing plan still be required?
Answer: Yes.

Question 24: Are elevator shafts allowed to be used as bracing?
Answer: Yes, if determined by a qualified person.

Question 25: Part 2 only addresses unreinforced masonry walls and does not include tables related to reinforced walls. Does Part 2 apply to reinforced masonry walls?
Answer: Yes. Tables 1 – 3 stipulate the minimum requirements for bracing unreinforced masonry walls during initial and intermediate stages. Reinforced masonry walls also apply to Part 2 and are referenced by Rule 211 (2)(b) in Standard Practice for Bracing Masonry Walls Under Construction. A bracing plan is required if not using Tables 1 – 3. A reinforced wall, depending on the method of grouting, may be an unreinforced wall during a portion of the construction phase.

Question 26: If a wall is being constructed as a part of a structural steel building with the masonry wall being connected to the structural steel as it progresses up, when and how will Part 2 apply?
Answer: As determined by the qualified person.

X. RULE 212 – TRIANGLE WALL BRACING SYSTEM.

Question 27: What is the maximum height of a wall that can be braced using the triangle wall bracing system?
Answer: 16 feet. See Table 4.

XI. RULE 213 – INSPECTIONS.

Question 28a: Who is responsible for inspecting the masonry walls and wall bracing systems when the mason contractor or controlling contractor is not on the jobsite?
Answer: A competent person must inspect the walls and wall bracing systems at the beginning of each shift and after any occurrence that could affect the structural integrity of the wall or wall bracing system. The competent person must be trained, experienced, and capable of identifying existing or potential hazards that could affect the structural integrity of the wall or wall bracing system and who has the authority and knowledge to take prompt corrective measures to eliminate the hazards.

Question 28b: Is the mason contractor's competent person the only employee who has the qualifications to inspect the wall and bracing for damages? Can the controlling employer or subcontractor employer inspect the wall and bracing for damages?
Answer: No. The purpose of a daily inspection is to check for any visible damage that may have occurred, e.g. operating mobile equipment may have kicked out a brace, winds were high over the weekend, or signs were moved. The competency and level of training that is required to conduct an inspection of the walls and bracing could be met by a subcontractor or controlling employer's competent person instead of a mason's competent person or engineer.

The definition of “competent person” means a person who is trained, experienced, and capable of identifying existing or potential hazards in surroundings, or under working conditions, that are hazardous or dangerous to an employee and who has the authority and knowledge to take prompt corrective measures to eliminate the hazards. The level of competency will vary depending on what a competent person is tasked to do. For instance, a controlling employer or subcontractor’s competent person that is tasked to conduct a daily inspection has to be trained, experienced, and capable of detecting visible damage to the wall or bracing, and then have the authority to vacate employees from the restricted zone and contact the mason contractor or other competent person who has the training qualifications as prescribed in Rule 205(2) to repair the damages. The controlling employer or subcontractor employer’s competent person for inspecting the walls is not required to meet the same qualifications of a competent person who trains employees to erect the walls and installs the bracing system. These are two different competencies.