

Draft Proposal

Protection of Employees On or Near Braced Masonry Walls.

(a) Definitions applicable to this section.

In addition to the definitions set forth in 1926.32, the following definitions apply to this section:

1. **Deadman** is a large weight that is of sufficient mass to anchor braces to a masonry wall.
2. **Grout pour** is the total height of masonry wall to be grouted prior to the erection of additional masonry. A grout pour can consist of one or more grout lifts.
3. **High wind area** is where construction will take place with winds that are expected to exceed 35 mph. on a regular basis.
4. **Protected area** is a location at a jobsite that is not exposed to winds such as basements and interior areas.
5. **Running bond (half bond)** is a bond pattern in which block are placed half way over units directly below creating a staggered look.
6. **Safe location** is an area at a jobsite that employees can take refuge in order to avoid hazardous conditions.
7. **Stack bond** is a bond pattern in which block are stacked directly over each other (not lapped longitudinally) creating continuous joints both vertically and horizontally.
8. **Straight coil loop insert** is a wall insert that loops around rebar and is suitable for the attachment of braces in a structural masonry wall.

(b) A limited access zone shall be established whenever a reinforced masonry wall is being constructed.

1. The limited access zone shall be established prior to the construction of the wall.
2. The limited access zone shall be established by the height of the grout pour plus four feet, and shall run the entire length of the wall.
3. The limited access zone shall be established on the side of the wall which will be unscaffolded.
4. The limited access zone shall be for personnel actively engaged in constructing the wall. No other personnel shall be permitted to enter the zone without prior authorization from the general contractor.
5. When wind speed, monitored by the general contractor, reaches 25 mph, personnel in the limited access zone shall check braces and secure site.
6. When wind speed, monitored by the general contractor, reaches 35 mph, all personnel in the limited access zone and in proximity to the wall under construction shall move to a safe location.
7. The limited access zone shall remain in place until the wall over 8 ft. are adequately braced per paragraph (c) of this section or supported to prevent overturning and to prevent collapse.

(c) Each employee shall be protected from the overturning and or collapse of a structural masonry wall by an adequate bracing system designed in accordance with paragraphs (d) or (e) of this section except when:

1. Structural masonry walls do not exceed 8 ft. in height.
2. A qualified person can demonstrate that modifications to paragraph (e) are adequate when addressing the bracing of the following (but not limited to) inherently more stable situations:
 - a. Shafts
 - b. Infills in existing walls
 - c. Construction in protected areas
 - d. Changes in wall thickness
 - e. Masonry pilasters
 - f. Corner returns, intersecting walls, etc
3. Permanent supporting elements of the structure are in place.

(d) Bracing shall be designed by a registered professional engineer when one or more of the following occurs:

1. Wall heights exceed 24 ft.
2. When the minimum requirements of (e) 1 and/or (e) 2 are not met.
3. Stack bond
4. High wind areas

(e) Design of a structural masonry wall bracing system by a qualified person.

An adequate wall bracing system shall be designed by a qualified person and constructed under the direction of a competent person in accordance with the requirements of **Option 1** or **Option 2**.

The following requirements shall apply:

1. Minimum design requirements for use in Options 1 or 2:

- i. F'm 1500 psi, concrete block laid in running bond pattern
- ii. Type S mortar
- iii. 60 ksi rebar, with minimum placement of 2 - #4 horizontally and 1 - #5 vertically at 48 inches on center each way
- iv. 2,000 psi grout required at reinforced areas
- v. Straight coil loop insert with coil bolts (safe working load = 2250 lb.).
- vi. Metal concrete tilt braces
- vii. Wall height not to exceed 24 ft.

2. Minimum field requirements for use in Options 1 or 2:

- i. Maximum horizontal spacing distance between two or more braces is 20 ft.
- ii. Maximum horizontal bracing distance from an end of wall or control joint is 10 ft.
- iii. A qualified person shall determine if walls less than 20 ft. in length will require two braces.

- iv. Connection of the brace to the masonry wall consists of a $\frac{3}{4}$ x 4 inch straight coil loop insert placed around a single piece of rebar located at an ungrouted bond beam.
- v. Make sure at least one piece of perpendicular rebar is located between the attached bar and face shell that receives brace (see fig. 1).
- vi. Base connection of brace consists of a $\frac{3}{4}$ inch anchor attached to either a 4 inch minimum thick slab or deadman.
- vii. Brace angle not greater than 60 degrees from the horizontal.
- viii. Slab or deadman connection must resist a minimum 3,400 lb. pullout force.

3. Option 1 – Bracing structural masonry walls when grout pours are limited to 5 ft. 4 in. or less in height.

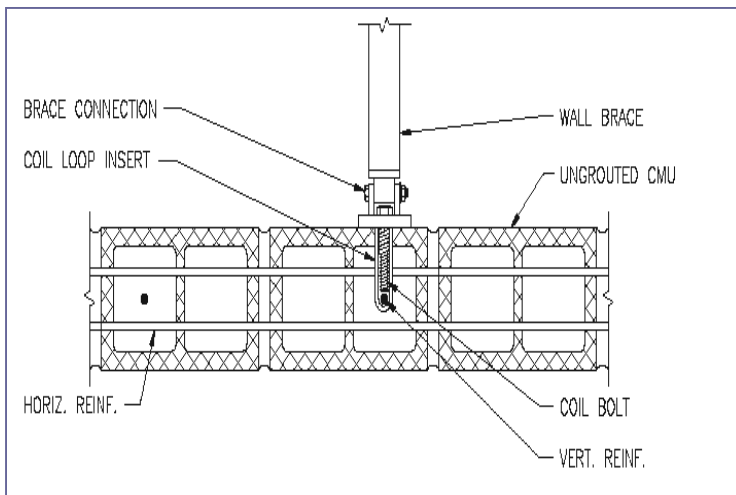
- i. First 8 ft. of wall can be laid with minimum reinforcement and then grouted.
- ii. Maximum 5 ft. 4 in. of additional wall can be laid with reinforcement located to receive coil loop inserts at the bond beam location.
- iii. First brace can now be connected to wall insert and attached to slab or deadman at base of wall.
- iv. Reinforced section can be grouted.
- v. Additional wall can be constructed following steps ii. through iv.

4. Option 2 – Bracing structural masonry walls with grout pours up to 8 ft. in height.

- i. Up to the first 8 ft of wall can be laid with minimum reinforcement and then grouted.
- ii. Maximum 5 ft. 4 in. of additional wall can be laid with reinforcement located to receive coil loop inserts at the top bond beam location.
- iii. Braces are now connected to wall inserts and attached at the base to either a slab or deadman.
- iv. The wall can now be laid and reinforced up to the grout pour.

- v. No more than 4 ft. of ungrouted wall above brace point.
- vi. Braced section of wall is now ready to be grouted.
- vii. Up to 8 ft. of additional wall height can be constructed and braced following steps ii. through vi.

Figure 1.



Straight coil loop insert attached to rebar with perpendicular rebar between it and face shell to receive brace.