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May 24, 2023

RE: Brick Wall Repairs
324 N. Main St.
Davenport, IA

To Whom It May Concern:

A follow-up site visit was performed at the property above on May 23rd. On the west face of the building, there are several large patches of clay brick façade which are separating from the substrate. These large patches appear ready to fall imminently, which may create a safety hazard to cars or passersby. The owner has already blocked off the area with cones and has begun removing drywall from the inside of the wall to get a view of what might be happening.

As viewed from the west exterior, there are two former window openings, roughly 12 feet tall by six feet wide, which appear to have been bricked over some years ago. The clay brick façade on and between these openings is bulging outward by several inches and looks poised to fall. In anticipation of these areas falling, the brick façade above the windows should be secured. This is to keep the entire face of the building from falling away when the bottom area(s) come loose. The same temporary façade support as was recommended on February 9th, 2023, may be used here too. Note that the elevation of the steel angle in the detail shall be at or above the top of the window openings.

Inside the first floor, the drywall is being stripped away. This reveals that the window openings were never filled with brick or block. Rather, the clay brick façade was just run right over the openings, unsupported. This lack of bracing helps explain why the façade is currently about to topple outward. The brick façade is unlikely to be preserved in place, but it can be brought down in a safe, controlled manner. The stable sections above will be secured as mentioned previously. With the loose façade removed, the window openings can be filled in with 12" wide, reinforced concrete masonry units (CMU). #5 dowels shall be drilled and epoxied into the sill of each window opening to secure the base of the infill. Four vertical #5 bars in grouted cells shall reinforce the infill wall. The top shall be capped with either solid block or a grouted bond beam such that the wall above the CMU can bear on the infill like a solid wall. After the window openings are infilled with reinforced CMU, the clay brick façade to the outside may be replaced. This time, the new façade shall be braced back against the face of the structural wall with brick pintels to keep it plumb and secure. A continuous, rigid insulation can also be installed between the CMU and clay brick façade, leaving a small air gap.

To the north of the two window openings in question, there is another issue. The wall appears to be losing some stability and is causing deformation. This is evidenced by the bowing of the interior light gauge steel furring and drywall; they bulge as if a large downward force is acting upon them. This downward force may be due to the reaction of an east-west beam which bears on the west exterior wall. Adding a steel column to support the east-west beam would alleviate much of the load from the exterior wall while the façade is rebuilt. This column may be a W6x15 positioned as near the inside face of the structural wall as possible. The cold form and drywall may be re-shaped around it to incorporate it into the re-finished wall. The brick façade outside this area may be secured and rebuilt as described for the other area.

The steel column must rest on a footing. This may be either the wall footing for the exterior wall, if it is wide enough to fit the column, or a new pilaster. The pilaster, if needed, would be a 12"x12" concrete addition to the exterior foundation wall in the lower level. This would allow the existing foundation to

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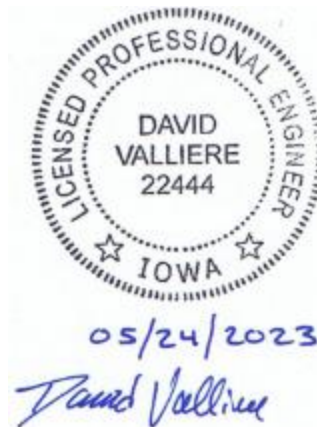
support the load from the east-west beam above, which is what it should already be doing. Before fitting the steel column into position, the east-west beam should be checked to make sure it is level and has not dropped. If it remains level, then the column shall be fit to its exact height. If the beam has dropped slightly, then it should be jacked back upward to its proper level position and the column fit to that elevation. This will require field measurement and possible field cutting and/or shimming.

The opinions and recommendations in this report are based on field measurements and observable conditions. It is not an assessment of the non-structural elements of the local building code or an in-depth analysis of the full structure. Should conditions change or new information become available, the Engineer reserves the right to amend his recommendations and this report. Select Structural Engineering assumes no liability on construction or demolition means and methods. Notify the Engineer immediately should field conditions vary from expectations, as a new course of action may be needed. If you have any questions about the findings or recommendations, please contact me.

Thank you,



David Valliere, PE



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Photo 1 – Clay Brick Façade pulling away from Substrate



Photo 2 – Window Openings to Infill

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Photo 3 – Excessive Downward Pressure on Finishes



Photo 4 – Existing Beam to Support

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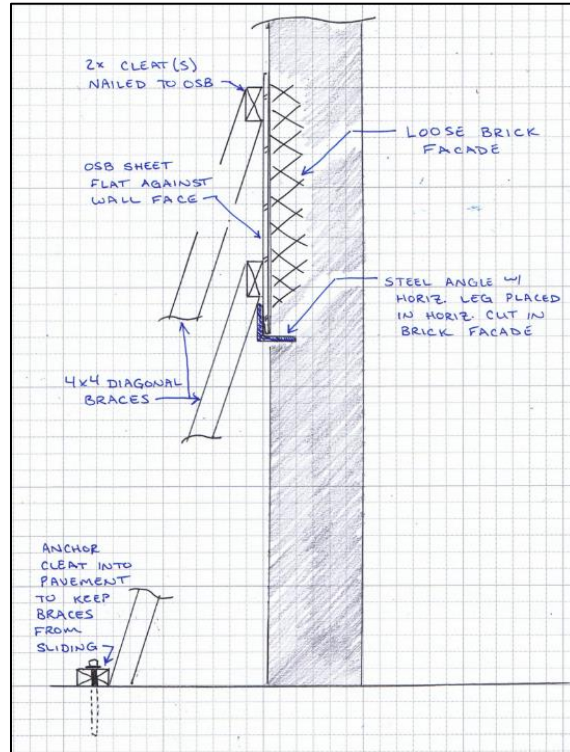


Figure 1 – Temporary Brick Façade Detail (from 02/09/2023)

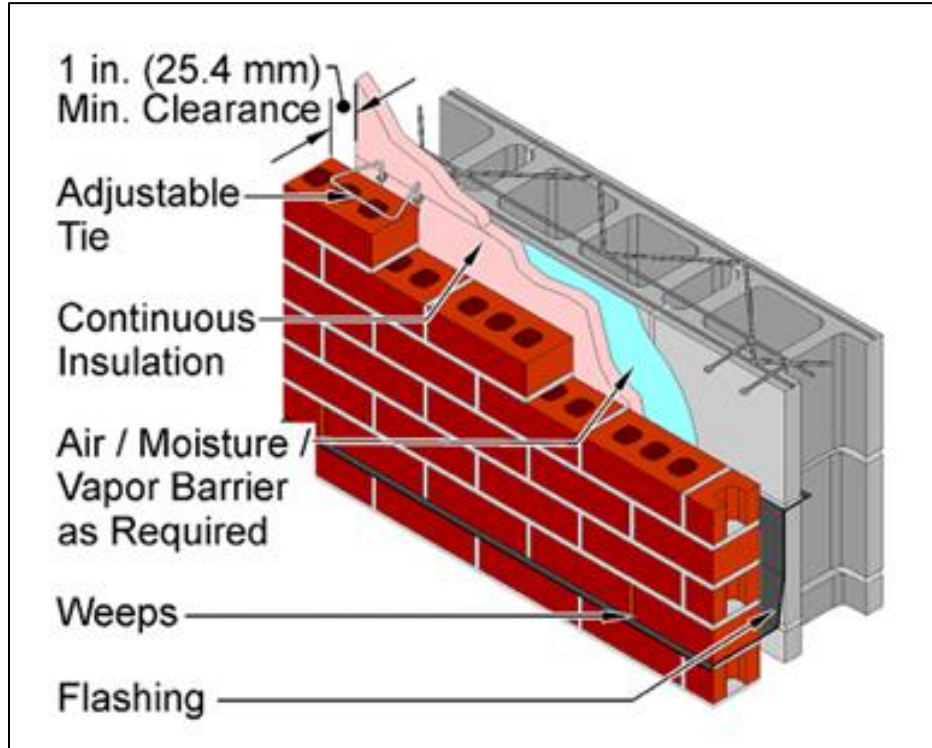


Figure 2 – Typical Brick Façade with CMU Backing

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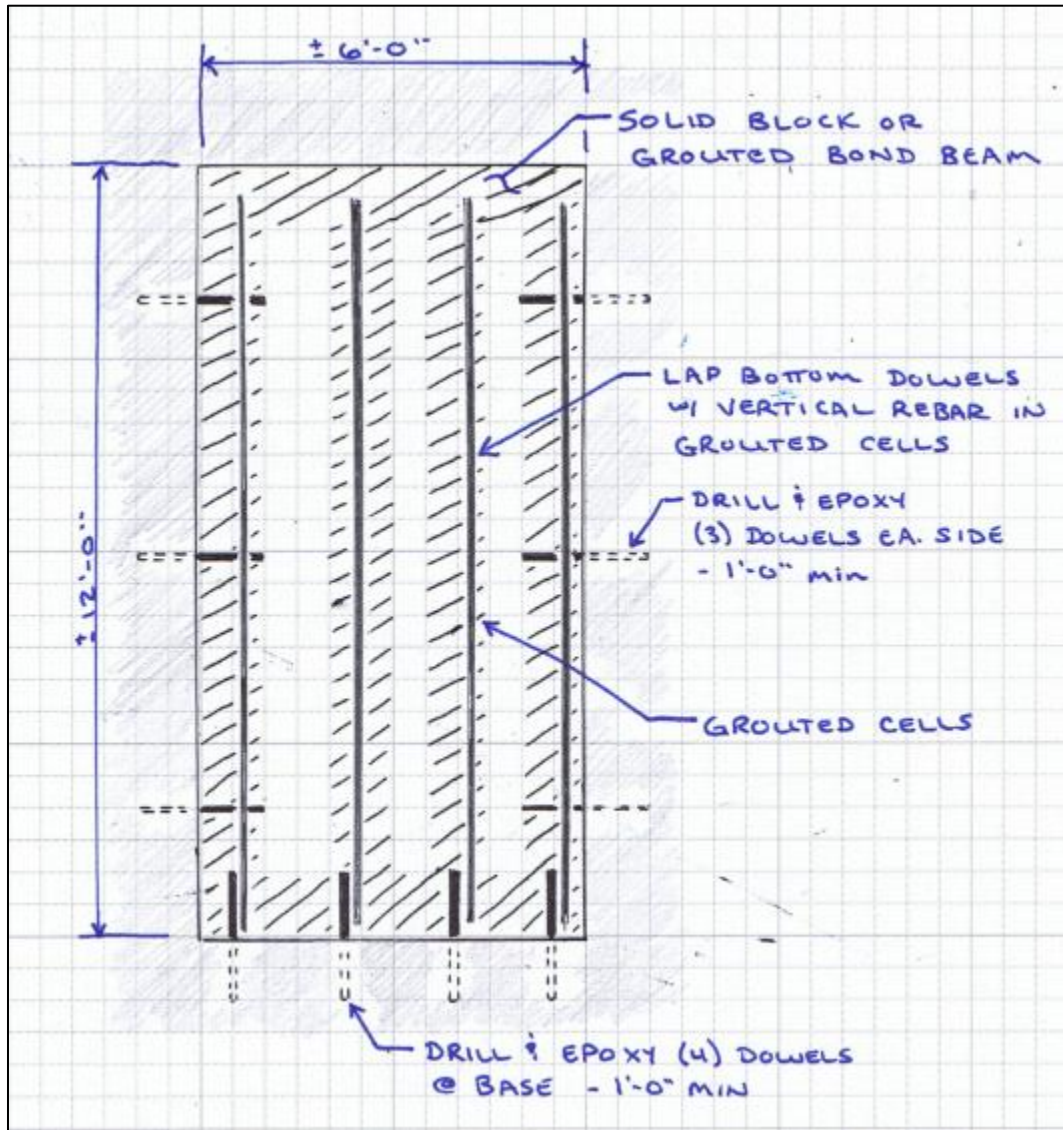


Figure 3 – CMU Infill Detail for Window Opening(s)

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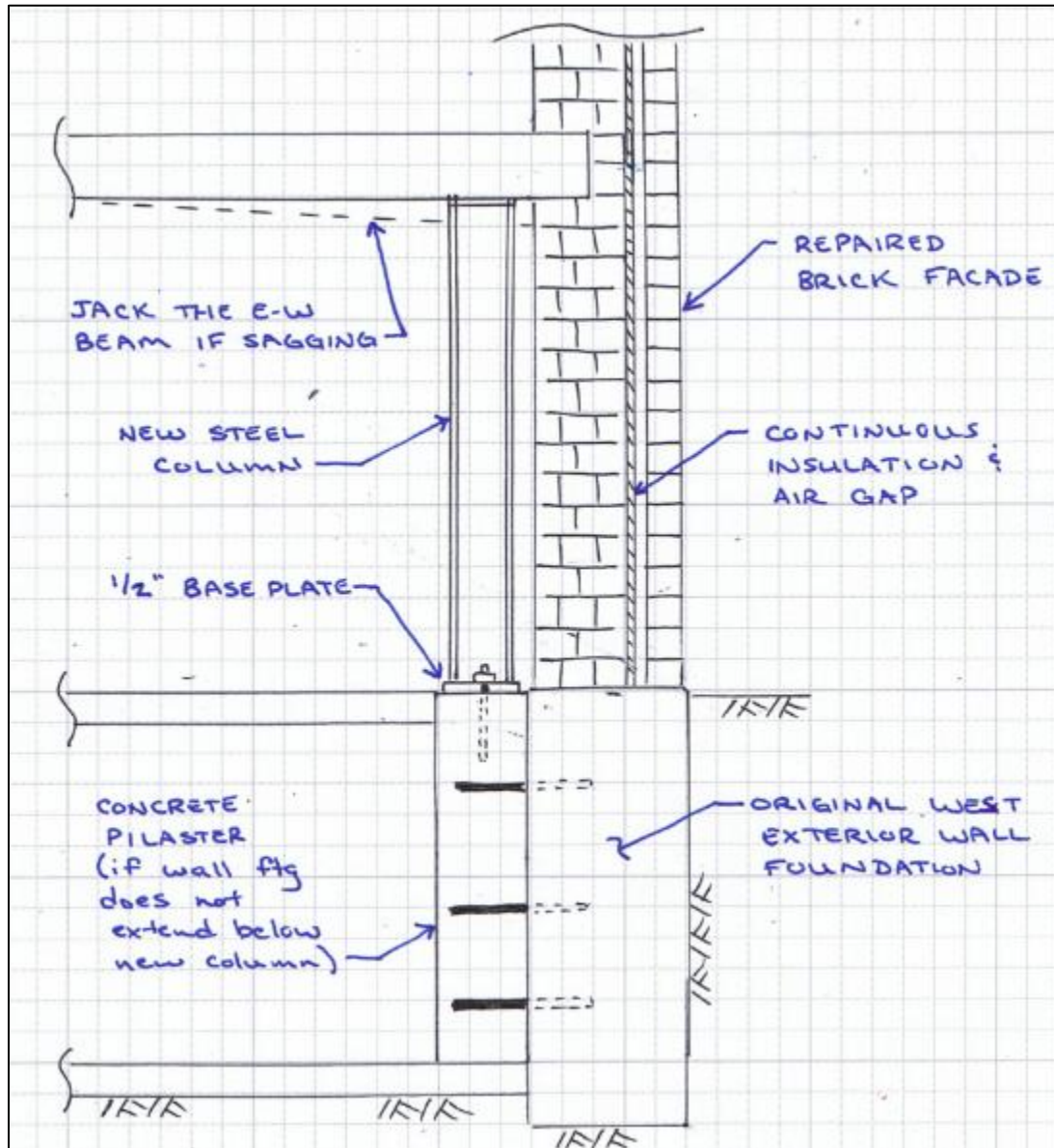


Figure 4 – East-West Beam Support Detail