



PROFESSIONAL ENGINEERING &  
GENERAL CONTRACTING SERVICES

November 20, 2017

Mr. James Ptacek  
Larsen Architects  
12506 Edgewater Drive, Suite 10  
Lakewood, Ohio

### **Russell Township Fire Station – Cursory Review**

Dear Mr. Ptacek:

Per your request we are writing this letter to summarize our walkthrough at the above referenced station on November 15, 2017. Oravec Design Build (ODB) was on site to review the existing framing and determine if it would be adequate to support the proposed roof addition.

The design intent is to install a sloped roof on the existing structure. The existing structure is an unreinforced CMU perimeter with a steel joist and steel frame structural system. The existing roof is a flat roof system.

The existing building has a low roof north building used as offices, a tall tower structure, and a four bay service garage. The north offices were finished at the time of our visit and provided minimal visibility to assess current integrity.

The exterior of the structure appeared to be in decent condition with only minor mortar issues noted at the west overhead door brick locations. Most likely water is infiltrating the veneer and causing deterioration through moisture and freeze thaw action.

The tall tower exhibited signs of settlement, and other damage associated with improperly reinforced/designed masonry construction. There were large vertical cracks and horizontal cracks in the structure that are a high concern to the structure's current integrity.

The service garage had vertical cracking in the full height walls spaced at approximately four feet on center (regularly) along with stair step cracking at openings and corners (see attached pictures for reference). Also noted was horizontal cracking along the tall walls located at approximately eight feet above finish floor. The horizontal cracking is typically indicative of no vertical reinforcing and solid grouting in the existing CMU.

ODB recommends a more thorough review be performed to assess the integrity of the existing structure. In the building's current state, it is not adequate to support the proposed roof addition without structural repairs.

#### Remediation Considerations:

- Hot dip galvanized steel lintels
- Weep holes and flashing
- Vertical reinforcing installed full height and grouted solid
- Tuck pointing damaged mortar
- Replacing CMU with broken face shells with new CMU
- Evaluating existing overhead door steel to determine if it is adequate to support brick/CMU

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Our walkthrough was performed witnessing only from ground level as no ladders were available during our site visit.

ODB's visual examination was a cursory review; only the framing exposed at the time of the site visit was observed, no destructive testing was performed while on site. Oravec Design Build LLC assumes no liability for concealed conditions that may affect this analysis nor any defects in construction, whether observed or not, since this office was not involved in the original design and construction of this residence. The opinions, conclusions, and recommendations contained in this letter are based on this writer's judgment and experience as a practicing Structural Engineer.

Please feel free to contact ODB's office with any questions or comments regarding this evaluation.

Best regards,



Matthew M. Oravec, P.E.  
President  
Oravec Design Build, LLC  
Attachments: Photo Legend and Pictures

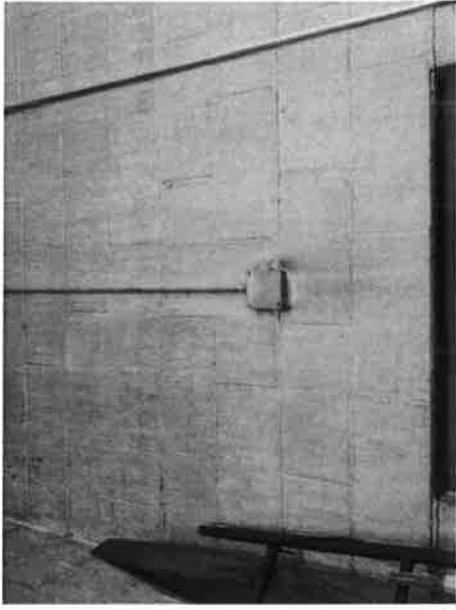




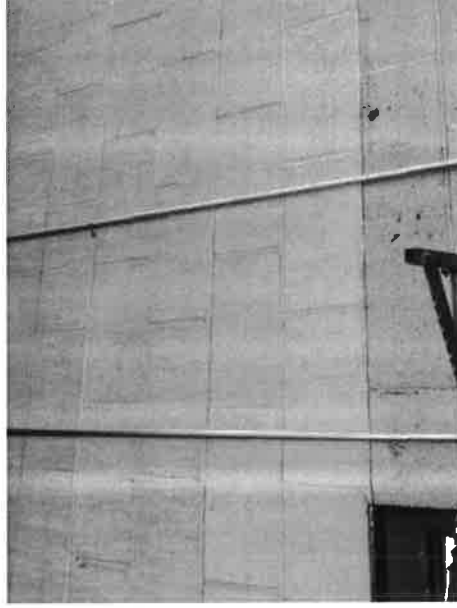
1- PIER CRACK AT LINTEL



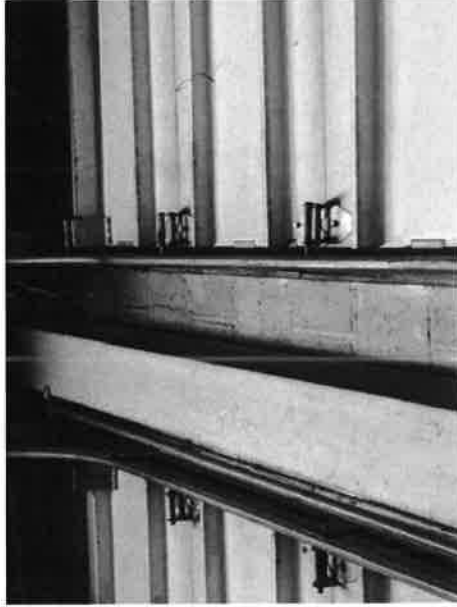
2- STAIR STEP CRACK AT CORNER



3- STAIR STEP CRACK AT MANDOOK AND HORIZ. CRACKS AT LINTEL



4- STAIR STEP CRACK



5- CRACK AT LINTEL



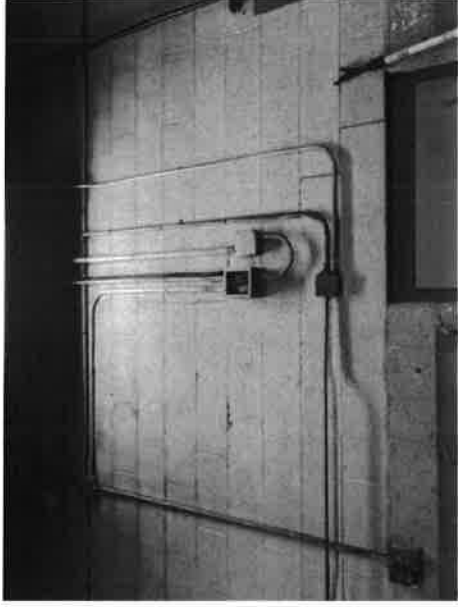
6- CRACK AT LINTEL



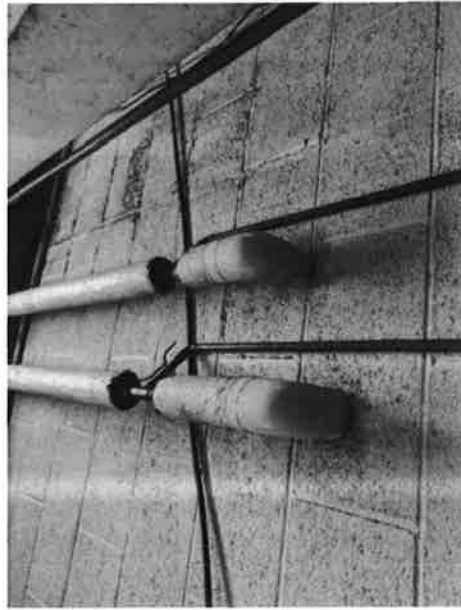
7- MOISTURE DAMAGE AND HORIZONTAL CRACKS



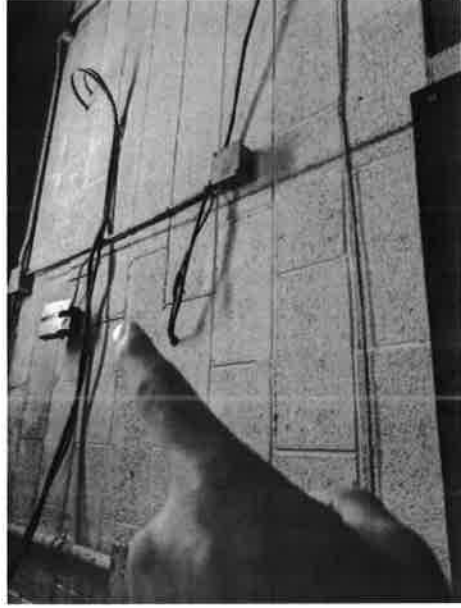
8- VERTICAL CRACKS @ 4' O.C. TYP.



9- STAIR STEP CRACK AT MANDOOR



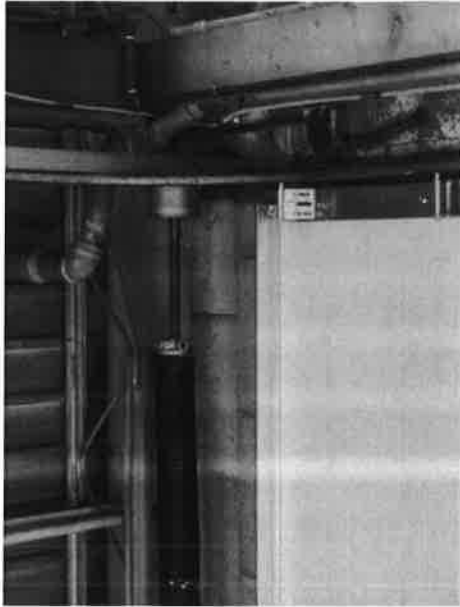
10- STAIR STEP CRACK



11- VERTICAL CRACKS OVER DOORS



12- VERTICAL CRACKS



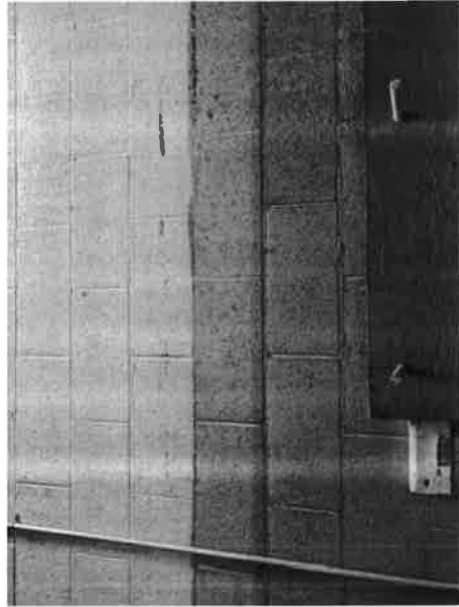
13- CRACKS AT OVERHEAD DOOR



14- STAIR STEP CRACK AT CORNER



15- VERTICAL CRACK



16- STAIR STEP CRACK AND VERTICAL CRACK



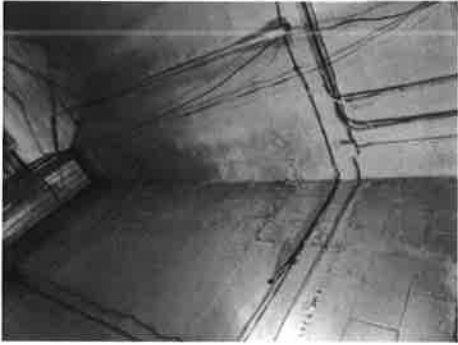
17- TYPICAL INTERIOR STEEL CONNECTIONS



18- 4" CMU AT NORTH WALL



19- LARGE VERTICAL CRACK EXTENDING TO LINTEL



20- WATER DAMAGE AND MASONRY CRACKS



21- SEVERE HORIZONTAL CRACK AROUND ENTIRE PERIMETER



22- CLOSE UP OF CRACK



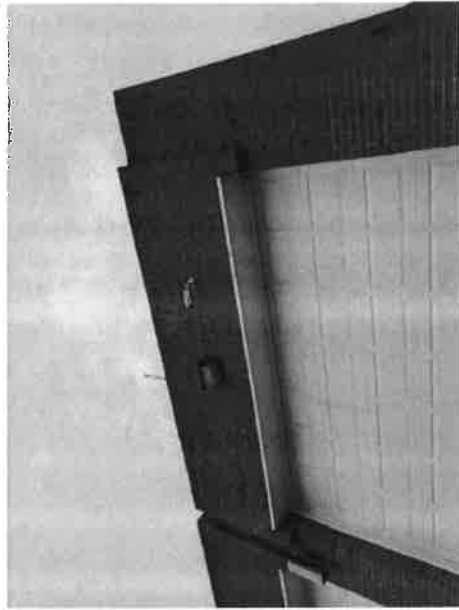
23- ANOTHER PERSPECTIVE OR HORIZ. CRACK



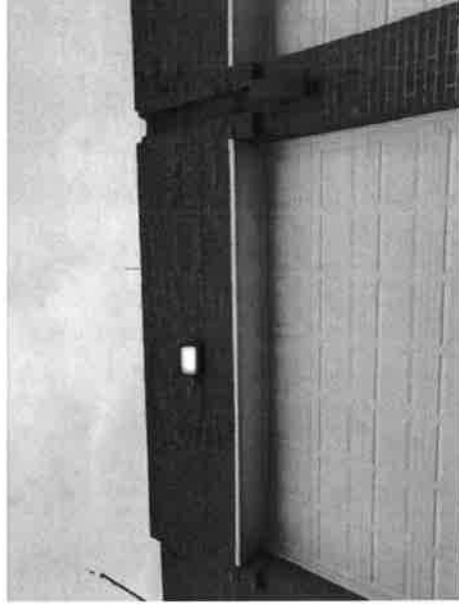
24- VERTICAL CRACK BETWEEN GARAGE AND TOWER



25- HORIZONTAL CRACK AT NORTHEAST CORNER OF GARAGE



26- LARGE CRACKS AT OVERHEAD DOOR, SIGNS OF EXTENSIVE WATER DAMAGE



27- LARGE HORIZONTAL CRACKING AT OVERHEAD DOOR, SIGNS OF EXTENSIVE WATER DAMAGE