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EXISTING RESIDENTIAL GARAGE STRUCTURAL ASSESSMENT REPORT

Project: Existing Residential Garage Assessment
19690 Shrewsbury Rd.
Detroit, MI 48221

Client(s): Dave Lawson
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Issues Observed During Site Visit:

- **Foundation:**
 - Upon assessment of the foundation, cracking and displacement of below-grade foundation are likely present and have caused resultant cracks and shifting in above grade brick wall. This may be due to frost heave during unseasonably cold winters where frost depth exceeded the 42" inch below grade design standard.
- **Slab:**
 - A longitudinal crack in the concrete floor slab was observed and the elevation of the slab measured to be higher along this crack line suggesting damage from frost heave.
- **Walls:**
 - **Masonry walls:** single wythe brick masonry wall was observed to have vertical cracking indicating foundation issues.
 - **Stud framed walls:** Base plates of stud walls were observed to have dry rot due to periodic exposure to moisture. Dry rot was also observed on the first approx. 4" of studs in several locations.
- **Garage door lintel:**
 - Sagging in the steel lintel above the garage door was observed. This may be due to inadequate beam sizing during original construction and/or loss of cross-sectional area over time from rusting. This sag has caused mortar joints to crack and bricks to be displaced. The cracking has also allowed more water to penetrate to lintel exacerbating rust.

Conclusions:

There are two options to resolve the failed foundation: **1)** Lift the entire garage structure off the foundation, excavate and extract this foundation, build new form-work, pour a new foundation, and then place the garage structure back on the new foundation. It is a distinct possibility that the cracked brick walls and rotting stud walls of the garage would collapse in the process of being moved, making this a potentially disastrous option from the perspectives of worker safety, property damage, cost, time, etc. It is also without question a more expensive option. If you did manage to successfully do this, you would still have a structure with cracked brick walls, rotting stud walls, and a failing garage door lintel when you were done. There is nothing about the existing garage that could not be reproduced in exactitude by the builders of today—and it would stand to reason that satisfying the lower standard of aesthetic mimesis set by the historic guidelines asserting jurisdiction here will pose even less a challenge to the builder selected for the job. **2)** demolish the garage and it's foundation and rebuild it.

In short, multiple structural issues were observed during our site visit. Repair of these issues is tantamount to demolishing and replacing the entire garage, yet more costly, dangerous and offering nothing in term of historic accuracy that cannot be accomplished by contractors of today. Therefore demolition and reconstruction is the psychically best option and the only rational one.

One additional note: as part of the garage reconstruction plan, a grading change should be considered so as to move surface runoff water away from the garage. A storm water retention practice could be one effective and ornate method of accomplishing this. Setting the top of the new foundation a couple inches higher than the former garage and pitching grade away is another; in this method, a tapered apron between garage slab and driveway would mitigate elevation change and prevent seepage under the garage door.

Regards,

A handwritten signature in black ink, appearing to read "Anthony J. O. Morin".

Anthony J. O. Morin, Principal