21RS003/CIHR21-0006
915 St. Cloud

Application to demolish a contributing secondary structure and re-build a new garage.
915 Saint Cloud
Primary structure (no alterations planned)
915 Saint Cloud
Secondary structure – proposed to be demolished

2015 Photo
915 Saint Cloud
Secondary structure – proposed to be demolished
January 11, 2021

Mr. Roger Shriver
915 St. Cloud Street
Rapid City, SD  57702

RE: 915 St. Cloud St. Garage Assessment
Structural Assessment / Recommendations
Albertson Engineering File #2021-012

Mr. Shriver,

As requested, we have completed our review of the garage located at 915 St. Cloud Street in Rapid City, South Dakota. Albertson Engineering was asked to conduct a visual observation of the building and provide an opinion of structural condition. Please note that our assessment and this letter are strictly based upon items that were visually observed at the time of our site visit. No measurements of members were performed, nor were any structural calculations performed. This letter should not be considered an exhaustive technical evaluation of the structure.

The site was visited by David Leppert, PE of Albertson Engineering on Friday, January 8, 2021. Also present at the time was Rodger Shriver, homeowner. Rodger Shriver indicated that the structure had originally been a chicken coop building that was converted to a single stall garage. Although noted as being very old, the specific age of the structure was not discussed.

Observations:

The following was noted and observed:

- The main garage is roughly a 12'-6"x21'-6" single stall garage with an overhead door on the east wall. There is a smaller lean-to shed addition on the north side of the building. The small north lean-to portion of the garage was not reviewed during the site visit.
- The garage walls are framed with 2x4 studs. The south wall studs bear atop a continuous rimboard assembly rather than having the wall’s sill plate rest directly on the foundation. The bottom rimboard assembly of the south wall is rotating, causing the entire wall to bow outward at the base of wall.
- The garage roof is a single slope roof from north to south. The roof framing for the garage are 2x4 joists spanning north to south supported on a single-ply 2x center support beam that runs east/west down the length of the building. The support beam is connected to every other joist with a vertical 2x4 spacer.
SD Trust Renovation – Skylight Openings
Structural Fee Proposal

The center single-ply 2x beam is in turn supported by a north/south multiply beam that is located roughly at the center of the building length. The center beam has been severely cut in order to install a garage door opener and is a state of structural failure.

Viewing from the exterior of the building, there is a notable sag and belly in the roof right around the failing center support beam referenced above.

Structural Opinion:

Based on the observations noted above, it is our opinion that the garage is in a state of structural failure and is in need of extensive structural repair or replacement. Because of the condition of the center beam, it would be our recommendation that the building not be occupied when there is snow present on the roof. Although we did not perform any structural calculations, we would offer the following regarding opinion on capacity and/or repairs:

- **2x4 Joists**: Based on experience, it is our opinion that the existing joists are not adequate to span the roof as currently framed. Additional joists and/or supports from below would likely be required to support the anticipated loads.

- **Center Single-Ply Beam (East/West Beam)**: Based on experience, the existing center single-ply beam that runs east/west is not adequate to support anticipated loads. The beam at a minimum will likely need to be strengthened by providing additional plies or could alternately be replaced in its entirety.

- **Center Multiply Beam (North/South Beam)**: The beam has been compromised by cutting for the garage door opener and is structurally failing. This beam needs to be replaced in its entirety and may need to be repositioned to accommodate a garage door opener when doing so.

- **South 2x Bearing Wall**: The wall is failing due to rotation of the bottom rimboard assembly and is therefore in need of replacement in its entirety.

Based on the number of repairs required, it is our opinion that it may be more economical to replace the structure in its entirety rather than perform the needed repairs. Actual costs for repair vs. replacement would need to be provided by a competent contractor.

It has been a pleasure to be of service to you. Attached to this letter are representative photos of the garage for additional documentation. Please feel free to call our office should you have any questions or need any additional information.

Sincerely,
Albertson Engineering Inc.

David Leppert, PE
Principal

Cc: File
Proposed New Structure
Proposed New Construction

The existing garage is 21.5 wide and 12.5’ deep, with a small addition built on the north.

The proposed garage is 22’ wide x 27’ deep.

The new garage will have the same roofline as the existing structure, the height of the roof will be 10’ on the south (alley) to 14’ on the north.

The new structure will have two bays. It is similar in alley frontage length to the existing structure, and the adjacent non-historic secondary structure to the west.

Alley loaded

Narrow lap siding to match the cladding on the house.
Block Comparisons