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May 14, 2019

Mountain Architecture and Design Group
634 Oak Street
Steamboat Springs, Colorado

Reference: Atwood Barn, Parcel near Steamboat Springs, CO

Subject: Existing Structure

Mr. Ed Becker,

The following letter documents the existing structure of the Atwood barn, and provides recommendations for preservation and remodeling. I performed a site visit with you on May 7, 2019 to view the barn and investigate the structural condition and integrity. The 22' wide and 34' long barn is a two story building with a gambrel style roof, and a second level deck on the east end. The barn is constructed on a cast in place concrete foundation of unknown depth with a slab on grade lower floor. The exterior walls are conventionally framed 2x6 stud walls with T111 sheathing/siding applied to the exterior. The upper floor is framed with 2x8 joists that bear on the exterior walls and on a mid-span 8x12 beam. The beam has a mid-span 6x8 post that extends to the concrete floor. The roof structure is a conventional collar tie gable form with applied gambrel pitches on the north and south. The roof framing consists of 2x8 rafters with double 2x6 collar ties/ceiling joists at 24" on center, a 2x10 ridge board, and 2x4 vertical supports extending from the collar ties to the rafters at mid-span. The west end of the attic space has a plywood floor installed on the ceiling joists and the vertical 2x4 supports have been eliminated.
Although the exterior finishes of the barn have been neglected, the general structural condition of the building is good. The foundation appears to be performing well. There were some small cracks in the slab but nothing was significantly displaced. The slab surface was uneven in places, but it appeared to be the result of the original finishing effort and not due to heaving or settlement. I did note mold in the mechanical room below the stairs that appeared to be the result of exterior moisture infiltration at the north side of the building. The upper floor structure was performing well and the 2x8 at 16" on center joists meet current code loading requirements. The roof system was also performing well and the collar tie system at the east end of the building (with the 2x4 vertical supports) is sufficient to carry the code snow load of 75 psf. The deck at the east end of the building appeared to have been built fairly recently. The deck is constructed

with 2x12 joists, a 5 1/8”x12” glulam rim beam, 6x6 posts with Simpson CC connectors, and founded on concrete piers. This deck structure meets current code requirements.
In my opinion this building has sufficient structural integrity to warrant the investment of a remodel with a few actions taken to improve the structure. First and foremost the site grading should be improved at the north and west sides of the building to provide positive drainage away from the barn. Currently the hillside drains towards the barn and the roof sheds to the north resulting in moisture damage to the north side of the building. Mold and rot investigation and mitigation should be performed at the lower level walls on the north and west sides of the building. I also recommend a moisture resilient siding and proper flashing/sealant be installed at the lower level. In the attic I recommend 2x4 vertical supports are installed in the west end of the building to match the existing ones at the east end. This will ensure the roof structure is able to support the currently required snow loads. Thank you for your attention to these items and if you have any additional questions or concerns please do not hesitate to contact me.

Sincerely,

Craig Frithsen, PE