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October 24, 2006
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RECEIVED NOV 01 2006

Sharon Backus
Star Valley Ranch Association
PO Box 159
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Ref: Cook Shack, Silo, Barn
Star Valley Ranch

Dear Ms. Backus,

Early last month I had the opportunity to meet with Mr. Joe Angelevic, Mr. John Dolton, and others. The purpose was to visually evaluate the structural integrity of specific framing in each of the three buildings referenced above. The following is a brief overview of my observations and conclusions.

Cook Shack

The cook shack is a building with numerous structural limitations that include, but are not limited to, the following:

1. Cutting into the ceiling finish made access to the roof attic possible. The roof framing was found to consist of evenly spaced job-site built wood trusses in the front half of the building and evenly spaced manufactured trusses in the rear half. The roof is showing signs of distress, particularly in the front half. There is a noticeable roof sag at the ridge, obvious movement in the job-site built trusses, and numerous water stains indicating past roof leaks. Both the job-site built trusses and the manufactured trusses have a limited safe snow load carrying capacity. The roof trusses have most probably performed as well as they have for as long as they have due to the lack of any roof insulation. Building heat loss has probably prevented significant accumulation of snow on the roof.

The roof trusses can be reinforced by: a) adding lateral braces to the longer diagonal web members of both the job-site built trusses and the manufactured trusses and b) adding nails to the plywood gussets of the job-site built trusses.

It is estimated that these simple "fixes" will increase the roof capacity to between 40 PSF and 50 PSF. For new construction in the Star Valley Ranch area a 100 PSF design roof snow load would be considered appropriate. This is double the estimated capacity of the roof trusses after they have been reinforced.

2. There is a lack of shear wall in the front half of the building. Star Valley is an area with a high seismic potential. In the event of a significant earthquake, the cook shack can be expected to experience damage, possibly significant damage.
3. There appears to be extensive rot at the base of the perimeter walls and columns. At some point in time the rot will adversely affect the structural integrity of the building.

Silo

The silo has several framing problems that are very obvious and should be addressed sooner than later.

1. There is a broken (split) floor joist that is not currently being supported. A wood column should be placed in line with and under the broken floor joist.
2. Several of the interior wood columns have significant checks (vertical splits) that are excessively wide and extend past the column centerline. Large checks potentially reduce the column capacity and add to the slenderness effect. To insure the continued performance of the columns it is recommended that lag bolts be installed that will stitch across the checks.
3. There are a series of log columns that are evenly spaced around the outside of the Silo. The columns are all exposed to the elements (weather). Several of the columns are showing signs of rot at their base. Failure of any of these columns will impact the Silo framing as a whole. It is recommended that the extent of the rot in each of the columns be determined so that an appropriate column repair can be developed where needed.

Barn

The barn appears to be performing well structurally. However, there are two noticeable items that limit its structural capacity.

1. The interior columns are very slender for their height. Therefore, the interior columns have a relatively small load carrying capacity. This capacity can be increased substantially by adding lateral bracing at the column mid-heights.

2. By inspection, the main floor support beams are undersized for their spans. One possible solution is to add a knee brace at each end of each beam. The knee braces would have the effect of reducing the span of the beams, thus increasing the capacity of the beams.

The three buildings all have minimal, if any, insulation. This may well be the reason the buildings have performed as well as they have for as long as they have. Without first reinforcing the appropriate framing, it is recommended that no insulation be added to any of the buildings.

Due to the age of the buildings, they were "designed" to a different code than that being used today. It is unfair to compare an older structure using today's building codes. Standards and conditions have changed substantially over the years. Therefore, existing buildings are allowed to be upgraded for life safety considerations only and do not have to meet all the requirements of a new building. If the buildings are to be upgraded, it can be done in accordance with the 2003 International Existing Building Code.

The above is a very brief visual structural evaluation of the cook shack, the silo, and the barn addressing very specific framing as requested by Mr. Angelevic and Mr. Dolton. Attached is a proposal to perform a more detailed structural evaluation of the three buildings, providing drawings that will detail the structural upgrading of the buildings in accordance with the 2003 International Existing Building Code.

Sincerely,



F. Richard Scheerer, PE