Restoring Your Barn

Restoring our barn was a process of trials, tribulations, and triumphs. We are quite pleased with the end result. In retrospect, however we might have done some things differently which would have taken some of the trials and tribulations out of the process. We would like to share some of our thoughts with you.

Before You Start

Ask yourself these questions:

1. Why do I want to restore my barn - sentimental reasons? Safety reasons? New use?

2. How much am I willing to spend? How authentic do I want the restoration to be? What compromises am I willing to accept? How will I finance it? Are there any grants or tax incentives? Will this change the tax base on my barn? (If the property is zoned agricultural, the restoration is for agricultural purposes, and there will be no charge in the footprint of the barn, there is the possibility that the taxable value of the barn will not be increased after reconstruction.)

3. How is it going to be restored?

4. Who is going to do this project? Do I want to be physically involved in the restoration process?

5. How long will it take? Does it have to be done all at once? Can it be done in phases?

6. How much is it going to cost? How much should I figure for overages?

7. Do I have the ability (financially and emotionally) to be flexible if plans have to change?

During the Process

1. Keep a daily journal of the whole process. Note decisions made, work completed, and money paid.

2. Go to your tax assessor and get written information on the assessed values of your buildings. Ask for the worksheet that he uses to determine the taxable value of your buildings. Make sure the locations of your buildings are documented on the assessor's worksheet. At this time check to make sure information about all of the buildings on your farm is listed or deleted if buildings were removed in the past.

3. Take extensive photographs of the outside and inside of your barn. Document all structural damage that needs to be repaired. Make sure your photographs document the location of the barn. If your camera has the ability to print dates on your photos, use that option.

4. If your property is not zoned agricultural and the restoration is being done for other reasons than

for agricultural purposes, you will probably have to pull a building permit.

5. Communicate regularly with your contractor. Don't assume anything. Talk to the people that your contractor hires. Don't be afraid to ask them what they are doing.

6. Inspect the work each day. Don't wait to talk to your contractor if you have a concern.

7. If the barn has to be dismantled, be sure you know where the contractor put the sections of the barn. Make a map of the locations.

8. If changes need to be made during the process, ask for time to think about the changes. Make sure you have an estimate of the cost of the changes. Agree to them on paper.

9. Expect the contractor to be involved in any subcontracting activities, i.e., excavation, cement work.

10. Encourage and praise your contractor and his employees. They need to know you appreciate their work. It should make it easier to talk with them when questions or concerns arise.

Process for Disputing a Tax Change

We were shocked when we received our new tax assessment after the barn was restored. The true cash value had increased by 56% and the taxable value by 41%. After working through the process of protesting the increase from the Township Board of Review to the Michigan Tax Tribunal, we would make the following suggestions for the process:

1. Don't panic. If you have kept a journal, you will have most of the information you will need. If you didn't keep a journal, spend time creating a history of the restoration of the barn.

2. If the increase of your taxes is small, the increase may be due to the State Equalization Factor that your assessor uses to increase everyone's taxes in the township. If you are not sure, call your assessor as soon as you receive your assessment and ask what "Multiplier" was used to determine the increase in the tax. (For example, if your Taxable Value in 2003 was $33,783, and the Multiplier was 1.023, then your Taxable Value for 2004 should be $34,560.) If your increase in taxes is greater than the Multiplier, you should ask the assessor what caused the extra increase in your taxes. If the assessor says it's because of the "new construction" on your barn, then prepare to go to your Township Board of Appeals. If your restoration takes place over several years, make sure you check your assessments each year.

3. If you have to go to the Township Board of Appeals, be prepared to take along evidence that what is considered "new construction" is actually restoration. This evidence would be a copy of Michigan statutes (MCL 211.21a(1)(a)) and (MCL 211.34d(1)(a)), photos, journals, and a history of true cash value and taxable value on the property. When presenting your evidence, remain calm and don't display strong emotions such as anger. Take someone along to listen objectively to the proceedings.

4. If you are denied your protest by the Township Board of Review, you can petition the Michigan Tax Tribunal. Petitions must be filed right away; however, it may take several months or more to receive a hearing date. Upon receipt of the hearing data, you have a limited amount of time to send a written argument of your position to the Tribunal and the assessor. The assessor must also respond by sending his argument to the Tribunal and to you.

5. At this point you will collect as much evidence to defend your position and to refute the position of the assessor. Ask for help from your Michigan Barn Preservation Society. If you are disputing the True Cash Value, you will need to prove that other barns of comparable value are assessed lower than yours. Talk to appraisers to determine the value of your barn and property. If you are disputing Taxable Value, you will need evidence that the taxable value of your property was unlawfully uncapped based on last year's taxable value. You will need to pull the township assessment cards on other properties that might have barns similar to yours in your township and other townships where your assessor works. You may want to talk to other assessors, board of review members in other townships, restoration authorities, and your congressman to help you locate any laws and information that might help you.

6. Prepare a logical argument to present to the referee (who is a lawyer) who is hearing petitions at the Tax Tribunal. Try to leave emotional elements out of the arguments. Remember, you have the burden of proof. The referee will take his/her recommendations to the entire Tribunal Board for final judgment.

7. When you receive your judgment, take it to a lawyer to have it interpreted. Also, look for any written errors in the numbers or text of the judgment.

8. Carefully check your new assessment in the following years to make sure they are not raising your tax beyond the "Multiplier."

9. Whether you prevail or fail to prove your case, enjoy your restored barn. You'll have lots of stories to tell of your triumphs, and, hopefully, not so many trials, and tribulations.

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The Basics of Replacing Beams, Post and Sills In Timber Frame Barns
Robert Foulkes, White Oak Timber Frame Ltd.

STEP ONE: **FIND A USE FOR THE BARN**

The first step in repairing a barn is to know what use the barn will have. Without a use, a purpose, the barn will have no value that justifies the effort and expense. Without a specific use, the future needs are unknown and the repairs cannot be made to fit the purpose.

STEP TWO: **ASSESS THE CURRENT CONDITION**

We are all aging and constantly replacing our cells - barns need the same, roofs get old, siding blows off in a wind, sills rot at the threshing floor.

Wind - If the reason you are replacing a beam or tow in the old barn is that the wind comes from the west and your barn is heading east, then it is time to triangulate! Most barns are rectangles, some are round, but none are triangles, the most rigid. Wind braces are placed at the corners (post to beam, post to sill) to make many small triangles that stiffen the building. Only half of them work at any one time while the other half are getting close to falling out. I have been in many barns with wind braces lying in the hay below the beam it used to brace. Put it back in and secure it with a spike (big nail) or wedges.

Farmers sometimes remove wind braces to reconfigure the space for new uses. The work of wind braces is cumulative. There is no need for one at every post to beam connection, but you can't take them all out.

Unused barns are not weighted down with hay or grain and are more easily pushed by the wind. After you have straightened the barn load it up, put it to use!

Rain - Water should run off and away from the barn, period.

Insect Damage - Powder Post Beetle -- If your barn has timber peppered with pencil lead size holes it is most likely a wood (beech, ash, maple) that powder post beetles like - replace it with a wood species that is less to their liking (white oak, cedar, hemlock, white pine). If the entire barn is made of the same wood with the same problem get a new barn.

Termites: With a nearby source of water termites will eat most any species of wood and they will do it in a way that is less evident than powder post beetles. They are not (yet) a problem in northern Michigan but do damage wherever they are. The chemicals used to kill termites do the same for farm animals and so are not often recommended for long-term use. When replacing sills that have been infested with termites it is wise to install a termite shield - a continuous piece of sheet metal that extends beyond the foundation to deter the termite from direct access.

STEP THREE: **MAKE IT SAFE TO WORK ON - WORK IN**

You have now looked closely at the barn and know what is wrong and why it happened. It is time to make the job safe.

Clean the place up - time is wasted and accidents happen when job sites are a mess.

Pick the best weather - that final day when you lift and replace that plate should be calm and dry. If you are ready and the weather is not - clean some more.

Use good equipment - farmers are famous for being "innovative," but a plow blade that breaks is not so dangerous as a jack post that buckles under the load.

Get enough help - plan out the process for getting the job done and add at least one more. Extra help can hold a safety line, spell a tired worker, take photos or if need be call 911.

STEP FOUR: **RESTORATION OR REPAIR?**

Restoration is to repair in the manner and with materials as were originally used. Repair can be done without matching the materials or the methods of new work to the original. If you find a 4'x 4' wind brace on the floor and drive it back into place, you have "restored" the barn. If you nail two 2' x 4's together and nail them into where the wind brace used to be you have repaired the barn.

Repair is fine. Restoration is better.

STEP FIVE: **KNOW WHAT EACH TIMBER DOES AND WHY**

SILLS - The lowest of timbers, sills are more important than you think. Pole buildings are tables with their feet in concrete; Timber frame barns are geometric cubes with rafters above and foundations below. The geometry is broken when a sill rots or breaks. Sills that need to be replaced should be replaced with full-length timbers of full dimension. I have seen many rotted sills patched in with short scraps butted to the old sill. Not good.

Because sills sit on foundations, deflection is not an issue but tension is. All masonry is weak at the top; sills protect and hold together the top of the foundation walls while they hold together the bottom of the frame.

Sills rot because they are watered down and not allowed to dry out. Using rot resistant timber (white oak, cedar, black locust) can help, but nothing is better than keeping the water to a minimum by replacing siding when needed and keeping an air space around the barn at the sill height. Cut down those grasses, bushes and trees growing up against the barn and let it breathe!

How to Replace Sills - It is simple - just lift the building or lower the foundation, take out the old one, slip in the new one. Lowering the foundation might sound like a joke but often a rotted sill is above a crumbling foundation and the sill can be replaced as the stonework is done.

If the stonework is sound, the building must be lifted high enough to free the sill and allow the new sill to be slipped in. The work that the sill does - tension - can be done by cables and come-a-longs while the switch is being made.

POSTS - Posts carry the weight of the barn back to the earth. A full height post carries great load at its base, much less at its top. Posts not well protected from water often rot at the joints where moisture can be trapped. As the joints rot they weaken and open, warning the owner to repair before things get too bad. If the post will need replacing, the load it carries must be held by temporary supports until the new post is in place.

How to Replace or Repair Posts - There is no simple formula for this, but here are a few steps:

Get the Load Out - remove the hay bales in the loft above, get rid of the old Hudson and dead tractors.

Mark the Connections - strike a pencil line across all joints that will be changed (post to sill, post to beam. Post to plate.) Some joints might be strained or damaged during the repair - the pencil line will show it.

Get Down to Something Strong - Temporary supports should be assembled in such a way as to assure that the loads are carried all the way to the ground. This can mean three stories of jack posts to repair 1 foot of rotted wood.

PLATES - Plates are the beams that carry the rafters. They should be high and dry if the roofing is kept up. If the roof has leaked and a plate has rotted to the point of needing to be replaced it is a serious problem. As in any beam replacement, the load must be carried and lifted enough to insert the new timber, but the force of rafters is often out as well as down. This requires holding the roof load in as well as taking it up.

If the wind picks up during this effort it might require holding down as well. All of this is happening way off the ground. Use a lot of cables and come-a-longs.

TIE BEAMS - Between the bents are Tie Beams. They tie the building together. They are most often parallel to and below the Plates. They were installed as the bents were raised and tenon into the posts, making the job of replacing them very difficult. It is therefore better to repair them if possible. Tie Beams often carry little or no downward load, working only in compression or tension. If that is the case and the damage is only at the connection (tenon), then a spine can be made to replace the damaged tenon and be inserted into a mortise made in the Tie Beam.

MAIN BEAMS - The largest, strongest, most heavily loaded beams are the Main Beams. I have repaired one barn in 27 years where a Main Beam had to be replaced. The most common causes of failure - undersized or overloaded for the job. Loose hay weighs less than bales, wagons weigh less than tractors and spay rigs. These increased loads can cause failure even if it takes 20 years for it to happen.

If the main beam is undersized for the loads and not yet damaged, there is one interesting “upgrade” that can be made by using steel cable or rod to strengthen the existing beam. Some headroom will be lost at the center of the beam.

CONCLUSIONS - I can tell you how to fix a barn. You have to come up with the reason(s) to do it but I will tell you my reasons - I am a saver, a fixer, a gleaner. I want my future to have some past, some sense of history. I like the barn on my cousin Owen’s farm that was “recycled” by my grandfather and his brothers in 1900. I like the barn on my farm that was built in 1865 by a man returning from the Civil War to a peaceful life. Having built barns from the ground up, I know the inherent energy that is within them and wish not to waste that energy. I wish to encourage small agricultural businesses and good land use. Every small farm that is viable and cherished will be kept.