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Existing Buildings--Remodel or Abandon?

Just because a building is there does not mean that remodeling is the best option. Here are ten factors of prime importance when deciding if a building is suitable for remodeling.

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As livestock production enterprises change, many producers ask, "Should I remodel this building or abandon it and start over?" A sound answer requires careful evaluation of the intended use of the building being considered for remodeling. The immediate future and projected long range production goals must be considered. We've all read about successful remodeling projects, but few of us ever hear about the large number of remodeling projects that end up as white elephants. Careful and thorough advance planning will help assure a satisfactory end project.

Reaching a sound decision about the possible use of existing buildings requires careful consideration of many individual factors. This NebGuide identifies and briefly discusses 10 important factors.

Alternative Uses

It is important to consider whether the facility is more suitable for some other phase of your production enterprise than the one being planned. For example, a large uninsulated machine shed may be more adaptable at a lower cost to a swine breeding/gestation facility than for use as a nursery or farrowing house. Factors influencing such a decision include: location, orientation, building dimensions, ability to incorporate an appropriate ventilation system, ease with which insulation and heating requirements can

be met, and the potential for future expansion.

In all cases you must consider the ability to provide suitable ventilation, manure handling, feed handling, and animal movement systems. In some cases an environmental control system including a specific type of heating system might be required. For example, if an existing building has a concrete floor it may be impractical to provide under-floor insulation and an in-floor warm water heating system. Thus, conversion to a farrowing or nursery unit might not be a good option.

Location

Careful evaluation must be given to location of the existing building as it relates to the farm home, neighbors, and future growth plans. Livestock production facilities should generally be located to the east or northeast of the farm home for control of odors in and around the residential living area. It is often wise to abandon a facility if it is relatively close to and on the upwind side of a neighbor's home.

Provisions must be made for runoff control, manure handling, and control of subsurface and surface drainage around the area. Maintaining floors in a warm, dry condition such as required for farrowing and nursery facilities may be impossible in a building which has been located in a low area.

Is the structure situated so that access is convenient and can be supervised? Because of the high labor input required for farrowing and nursery facilities, do not locate them in remote areas where passage and visitation to the facility require special effort. Likewise, while a remote location may be desirable with regard to odor control and manure handling, such areas may be opening the door to uncontrolled access by visitors, resulting in greater potential for disease spread and possible theft.

Is the structure located such that future expansion is possible? Often, older buildings are clustered in a small area. Don't get locked into a location which does not offer the potential for expansion.

Accessibility

Is equipment access to the building interior possible during remodeling and/or during operation if needed? While the size of doorways generally can be increased, additional posts and beams are usually required. Conversely, low doorways or ceilings may make routine tasks difficult and frustrating.

Is the building in its present location easily accessible during all kinds of weather? A good all-purpose, all-weather access road is essential.

Earth moving and road building consume construction dollars and are often perceived as a non-recoverable investment. Nevertheless, they are important parts of the overall construction program. Building around an existing facility because of the presence of a \$500 road or avoiding a new location because of a \$1,000 soil moving cost may turn out to be a very expensive decision.

Interior Space Arrangement

Does the existing structure allow easy adaptation to the proposed use? Internal support posts, particularly in multi-story buildings, frequently are spaced such that they interfere with requirements of the new use. For example, posts may end up being in the creep area of a farrowing crate or in a feed alley. Existing post locations can sometimes be spanned with subbeams, or additional beams and posts can be installed. However, relocating a post usually requires a new footing beneath the post as well. Hence, savings might be non-existent when you consider the cost of breaking through the existing floor

to provide large spread footings below each column or post.

Are the building dimensions suitable? Attempting to squeeze two rows of farrowing crates into a 20-wide building can result in conditions so crowded and difficult to work with that much efficiency is lost. Under such circumstances the long-term effects of a decision to utilize a narrow building may lead to remodeling not being a wise investment. Conversely, a building that is excessively wide may be difficult to ventilate properly, and can result in excessive costs due to the extra space. In these cases, it is often better to postpone use of the existing structure until it can be better adapted for some other phase of the production system.

Structural Soundness

Careful evaluation of the structural integrity of the building is extremely important regardless of its anticipated short-term or long-term use. Among the factors which must be considered are the alignment and general condition of the footings and foundation walls, strength and alignment of sidewalls, and condition of both roof framing and roof covering materials. Repairs of foundation walls are usually quite expensive and difficult to perform.

A building with a moderate to severe misalignment of the ridge line (swayback) may have been exposed to unusually heavy loads or had poor maintenance. This could lead to increased remodeling costs and future high maintenance and repair costs.

While minor roof leaks can sometimes be temporarily tolerated in a machinery storage structures, swine growing/finishing unit, or swine breeding/gestation unit, leaks of any kind are unacceptable when the building is insulated for use as a farrowing house or nursery. Further, roof leaks can rapidly contribute to deterioration of structural components, resulting in excessive repair costs or building collapse.

Environmental Control System

If the proposed facility is to be mechanically ventilated, such as a swine nursery or farrowing house, careful consideration must be given to the building construction to determine whether air inlets and fans can be easily installed and properly located. As building widths exceed 24' or as animal holding units exceed more than two rows in width, multiple air inlets are usually necessary. This requires openings in addition to those which can be provided along the eaves or sidewalls. Further, providing sidewall openings for fans and/or air inlets in a concrete block or tilt-up concrete building can be a major construction task.

Similarly, if the proposed use of the building is for breeding/gestation or growing/finishing which have traditionally been non-mechanically ventilated, provisions for ridge and eave vents and sidewall openings must be made. Building location, orientation, and roof slope are critical details in a non-mechanically ventilated building. A location within 100' of a shelterbelt will result in poor ventilation.

Manure Management

Do the available manure management system options fit in with existing equipment and operational procedures? Incorporation of in-house or under-floor manure storages in existing buildings is usually very difficult. Removing a portion of a concrete floor or filling in an existing manure pit to install a Y-gutter or flushing gutter can be time-consuming and expensive. Likewise, the building might be situated such that drainage to a lagoon for a flushing system is not easily achieved. Thus, the cost of adding extra equipment to incorporate this essential component of a livestock facility may make remodeling of the

existing building inappropriate. Any special equipment required to handle manure just in the remodeled facility must be considered as a part of the total remodeling cost.

Rodent Proofing

Is the existing building capable of being made reasonably rodent proof? A concrete slab on-grade with no perimeter footing is generally quite acceptable for a machine shed. However, such construction is not appropriate for livestock facilities because of the inability to control burrowing and harborage of rodents beneath the slab. Consequently, the mere fact that the existing building was built with a slab or with a shallow footing (less than at least 2' below external grade level) may make it unsuitable for use as a livestock unit.

Energy Use

Providing environmental conditions to match the thermal requirements of animals often requires installation of new or additional insulation. Adding thermal insulation to the walls and ceiling of an existing structure usually is difficult since the lining material or siding may need to be removed. Consideration must also be given to adding perimeter insulation to further control heat losses from the facility and to provide a warmer, drier area near the foundation.

Properly installing perimeter insulation can be almost impossible with existing structures. The problem is accentuated by the nonavailability of rodent-proof and water-vapor-proof insulation materials, necessitating incorporation of a polyethylene vapor barrier and appropriate rodent control measures. Incorporation of these features frequently increases the cost of adequately insulating an existing structure by a factor of two to five compared to costs of similar measures in new structures.

An inherent part of environmental modification is infiltration control. The cost of "tightening up" an existing building to limit heat losses and eliminate drafty conditions due to infiltration must be included in decision-making deliberations.

The presence of numerous windows also necessitates extra expenses. Windows facilitate management by permitting observation of the animals without turning on lights and reduce the need for continuous operation of lights. However, the low thermal resistance of windows results in a high rate of heat loss compared to a well insulated wall section. Thus, window areas should be minimized, and all windows which are used should have multiple glazings.

Do not overlook the potential for incorporation of auxiliary heat sources. As new technology increases the opportunities for incorporation of solar energy or other techniques, evaluate buildings for their potential for use of such options. Recent studies have shown the use of solar energy in nursery facilities to be economically feasible if a heat storage mass is provided. The benefits of using solar heating in facilities for other uses are still questionable. In all cases, the bottom line is total economic returns. Do not look at heating fuel savings only. Instead, look at total system installation and operating costs, as well as net savings.

Insurance Coverage

The electrical system in most existing buildings does not meet current requirements of the National Electrical Code (Nebraska state law). The Code sets forth minimum standards which are necessary to minimize the risk of electrical system failure, the risk of animal or personnel injury or death, and the cost of maintaining the electrical system. Many insurance companies will not knowingly insure a

building with wiring which does not meet minimum Code requirements. Some producers have had to re-wire their buildings in order to retain existing insurance coverage. Include the cost of providing adequate electrical service as part of the remodeling cost.

Foam insulation materials release toxic gases when they burn and most foam insulation products burn very rapidly once ignition occurs. Few, if any, insurance companies will provide insurance coverage of a building with exposed foam insulation of any type, i.e., the foam must be covered by a more fire-retardant overlay material. If insurance coverage is available, it's usually at a very high premium rate. Thus, the presence of foam insulation on the roof, ceiling or walls of an existing building may provide little savings.

Closely spaced buildings increase the risk of multiple building loss in the event of fire. Buildings spaced less than 75' apart increase the risk of fire spreading between buildings. Similarly, long buildings with continuous, enclosed attic spaces and buildings connected with enclosed walkways increase the risk of more extensive losses due to a fire. Remodeling closely spaced buildings may increase the insurance premiums on both buildings and add to the long-term project costs.

Economic Considerations

Because of the large number of unknowns associated with remodeling existing structures, many builders are hesitant to accept remodeling jobs. If they are accepted on a contract basis, contracts can be heavily "padded" to compensate for possible unknowns, making remodeling very expensive. So, consider the cost of both new and remodeled facilities and the availability of other labor to accomplish the remodeling task.

As a general rule, if the cost of remodeling exceeds two-thirds to three-fourths the cost of a comparable new facility, it is wiser to proceed with the new building. In certain cases, it may be possible to realize some savings by using materials from the existing building; however, labor costs for salvage may be excessive. In calculating remodeling costs, activities such as demolition of interior structural components, concrete floors, etc., required to make remodeling possible and to adapt the building to the new use must be included. Hence, both remodeling costs and operational costs of the new facility become considerations in the overall planning effort.

In nearly all cases, it is unwise to plan a new \$50,000, \$100,000, or perhaps \$500,000 production center around an existing \$5,000 building or \$1,000 concrete slab. While use of such components may save a few dollars initially, the long-range cost in terms of restricted expansion, livestock movement, feed movement, or vehicle movement in and around the facility may offset any initial savings. Sometimes, a bulldozer is the most suitable way to "remodel" a structure.

Keep savings and investments in perspective. Don't let an existing building of small financial significance determine the outcome of a major investment. Above all, don't make the common mistake of saying, "The building is there, I have to use it." While that might be an appropriate response under limited situations, careful planning is necessary to verify that it is the best response in a given case.

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