



## Recommended Tobacco Barn Construction Features

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Once or twice in a lifetime the average tobacco producer faces the decision as to what tobacco housing and curing facility he needs to build. For some, this may be to replace a barn that has burned or blown down. For others, it may be an expansion of production by farm acquisition or lease-in of extra poundage.

In all cases, the important fact is to build the most suitable facility for present and future production methods. With labor becoming more costly and scarce, labor-saving features are a must. Rising material and construction costs continue to increase the initial investment costs past previous levels. An air-cure tobacco barn, for burley or dark tobacco, is the largest single investment required in the normal tobacco production system. Trends toward mechanization affect whether a facility can be modified or whether it will be obsolete in a few years.

Following are several recommendations concerning tobacco barn construction or remodeling. These recommendations are included in newly revised blueprints available through the Agricultural Engineering Plan Service (see separate plans list).

- 1. Location** – Locate on high ground, ridge or hill area, with open terrain for good wind currents and air movement, and accessible to fields and farmstead.
- 2. Orientation** – Orientate with the long side perpendicular to prevailing fall winds, usually toward the southwest (ridge northwest to southeast).
- 3. Utilities** – Electricity is generally needed for stripping room lights, motors or other special equipment and tasks. A water supply is optional. Some fuel type will be needed for heat if a stripping room exists.
- 4. Width** – The most common widths are 32 to 40 ft with 2 or 3 driveways. Wider barns or sheds on a side begin to limit ventilation through the tobacco and affect curing results. Driveway widths of 16 ft are most suitable for the new labor-saving cable-hoist housing method.
- 5. Length** – The length is generally in multiples of 12 or 14 ft with the maximum length determined by tobacco capacity needed or levelness of terrain. The use of smaller barns may be an advantage for fire safety and convenience to field or other farm uses.
- 6. Height** – Barn heights are trending toward only 3 – 4 tiers to reduce the labor required and to be more compatible with modern construction methods and newly developed housing systems.
- 7. Foundation** – Concrete piers, solid concrete walls or concrete blocks are used to support sawed posts. All posts should have steel anchor straps with bolts rather than nailed or pin-type connections for adequate post anchorage. Full cross- and longitudinal-bracing are mandatory for resistance to wind forces and structural strength. An increasing number of pole-type barns are

being built which have fewer internal braces that interfere with tobacco housing and workers, and offer more versatile uses in the future.

8. **Framing** – Rough sawn native oak, poplar and /or pine wood is widely used. Sound quality lumber is needed for tier rails, tier rail supports, plates and other load-bearing structural members. Specific sizes are shown on the blueprints. *Do not* substitute “dressed” (S4S) lumber without increasing the size or quantity of members used.
9. **Roof** –The rafter-type roof structure is most common. The clear-span trussed-roof type structure is sometimes used for more open interior space and versatile barn structure.
10. **Siding** – Wooden boards are most common and often painted with a suitable barn paint or black creosote-tar mixture that is more economical and provides better wood protection and longer life. Metal siding can be used depending on the barn design and ventilation requirements.
11. **Ventilation Doors** – Approximately 1/3 of the sidewall should be openable with vent doors for good natural ventilation. Vent door types include the traditional hinged panels, alternate lightweight track panels or the more economical top-pivoted panels.
12. **Driveway Doors**– Full-width driveway doors allow easy access and convenience in the barn. Either hinged or track doors can be used. A minimum height of 10 ft is recommended. Up to 12 ft may be desired for tall equipment needs.
13. **Tier Rails** – Use 3 in. × 4 in. sound quality wood members *only* for *lightly loaded* 12 ft tier rails; use 4 in. × 4 in. or equal for *heavily loaded* 12 ft and all 14 ft lengths. Unless center supported, 4 in. × 4 in. is not safe for 16 ft and longer designs.
- **Vertical Spacing** – Five-ft vertical tier-rail spacing is recommended for two-tier barn designs with only one worker in the barn; 4 ft 6 in. spacing for three-tier designs with 2 workers in the barn or four tier designs with 3 workers in the barn. The 5 ft 0 in. spacing is necessary for the new labor-saving cable-hoist housing method.

- **Horizontal Spacing** – Forty-eight in. center-to-center tier rail spacing is traditional but a narrower 40-44 in. spacing is suggested for easier standing by the workers and for handling of tobacco.
- **Tier Rail Supports** – Some minimum sizes of supporting beams for tier-rails when using sound quality full-dimension native oak, or Southern yellow pine are

Span (length)	Using 12ft Tier-Rails	Using 14ft Tier-Rails
12 ft	2 in. x 8 in.	2 in. x 8 in.
14 ft	2 in. x 10 in.	2 in x 10 in.
16 ft.	2 in x 12 in.	2 in x 12 in.

**Caution** – *Do not substitute weaker species such as poplar or other pines or dressed (S4S) lumber without increasing quantity or sizes of members or using supplemental bracing*

14. **Supplemental Heat** — Coke and LP Gas have been widely used as supplemental heat to aid curing in humid weather or for big tobacco but the increased cost and scarcity have reduced the uses to almost zero. For further information on gas or coke stoves and curing recommendations, see separate publications.
15. **Fans** – High volume ventilation fans can be used in tobacco barns to aid circulation and improve curing at an economical cost. See a separate publication for details on using fans in conventional burley barns
16. **Labor Saving** – Tall barns are not as practical or desirable as in the past. Labor studies have shown that tall barns require more laborers, utilize labor less efficiently, and require more time and energy to house tobacco than do lower barns. Changes in the relative costs of roofing and structural framing have made lower buildings nearly as economical per unit of volume and tobacco capacity as tall buildings. Thus, lower height barns and newer designs featuring 3-4 tiers or mechanical housing aids are recommended for labor efficiency.