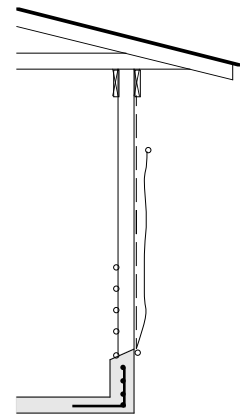




**Typical Sidewall - Outside Alley**

The outside walls of a freestall barn must support the roof and provide adequate stability to prevent the barn from blowing over or pulling out of the ground during high winds. In addition these walls must:

- provide a clear and unobstructed opening to promote maximum air exchange and air flow over the cows.
- provide protection from cold, winter winds and blowing precipitation.
- support components such as fences, bump rails, gates, and curtains.
- roof overhangs (eaves) need to be long enough to minimize sunlight penetration during hot weather and to help protect from blowing precipitation. Roof gutters that collect roof water runoff will also help control water blow-in.



A well established sod area or gravel drain underneath the drip line will minimize splashing if roof gutters are not installed. To protect the building sidewall and curtains, fence animals away from the area next to the building. This fence should be of open construction to minimize wind blockage. In many cases this fenced off area provides a convenient walkway for workers and visitors.

Curtains are an effective and economical method to provide year-round cow comfort in a freestall barn. During steamy summer periods, curtains allow complete opening of all barn walls, exposing cows to breezes from any direction. As weather cools down, curtains may be placed at cow level to provide more protection from cool winds and rain or snow. During severe winter storms, curtains are closed to protect cows from blowing snow and wind.

Typical curtains are a flexible, single-ply, ultraviolet (UV) resistant, plastic type material. An open weave or mesh windbreak material can also be used. This blocks the wind but allows for air exchange even when the curtain is closed.

There are a variety of methods for installing and operating curtains. Complete commercial curtain kits, a combination of commercial and site built components, or only curtain material can be purchased. Curtains can be opened and closed with temperature-controlled winches, hand-cranked winches and rollers, or in some cases, nailed up for the winter and removed before warm weather returns. In almost all cases, a portion of the curtains should be easily adjusted to allow for sudden changes in the weather.

Curtains can be damaged when opened or closed. Curtains that are left bunched up close to the ground can be damaged by nesting rodents and accumulated bedding, dirt, water, and weeds. Machines and animals can tear curtains. Loose curtains flapping in the breeze can quickly become torn and tattered.

This idea plan is intended to provide educational information and ideas concerning dairy housing facilities. **It is not a construction drawing.** Anyone planning to build a dairy barn needs to work with a competent builder and/or design engineer to assure that a safe and long lasting building is constructed. Check with local authorities to determine state and local permitting requirements. Barns used as part of milking operations may also require approval from your milk inspector.

The Department of Agricultural and Biological Engineering at Penn State has a variety of educational material available related to agricultural and biological engineering. This material is intended to help Pennsylvania farmers and others develop buildings and facilities for modern, environmentally-compatible farm facilities. The material can be used in conjunction with county extension staff, builders, suppliers, consulting engineers, the Natural Resources Conservation Service, financial management advisors, farm lenders, veterinarians, and others to assemble a facilities plan suitable for local conditions.

Publications are available in the areas of agricultural safety and health, animal housing systems, building and farmstead planning, crops and greenhouses, machinery systems and tractors, residential housing, soil and water resources, and solid waste management. Contact your county Penn State Cooperative Extension Office for more information on these subjects. You can also obtain an index of publications concerning the above areas by calling, writing, faxing or e-mailing:

Department of Agricultural and Biological Engineering  
246 Agricultural Engineering Building  
University Park, PA, 16802-1909  
Telephone: 814-865-7685 Fax: 814-863-1031 E-mail: [agbioeng@psu.edu](mailto:agbioeng@psu.edu)  
Web Site: <http://engabe.cedec.psu.edu>

For more information on dairy housing, the following reference manuals are available:

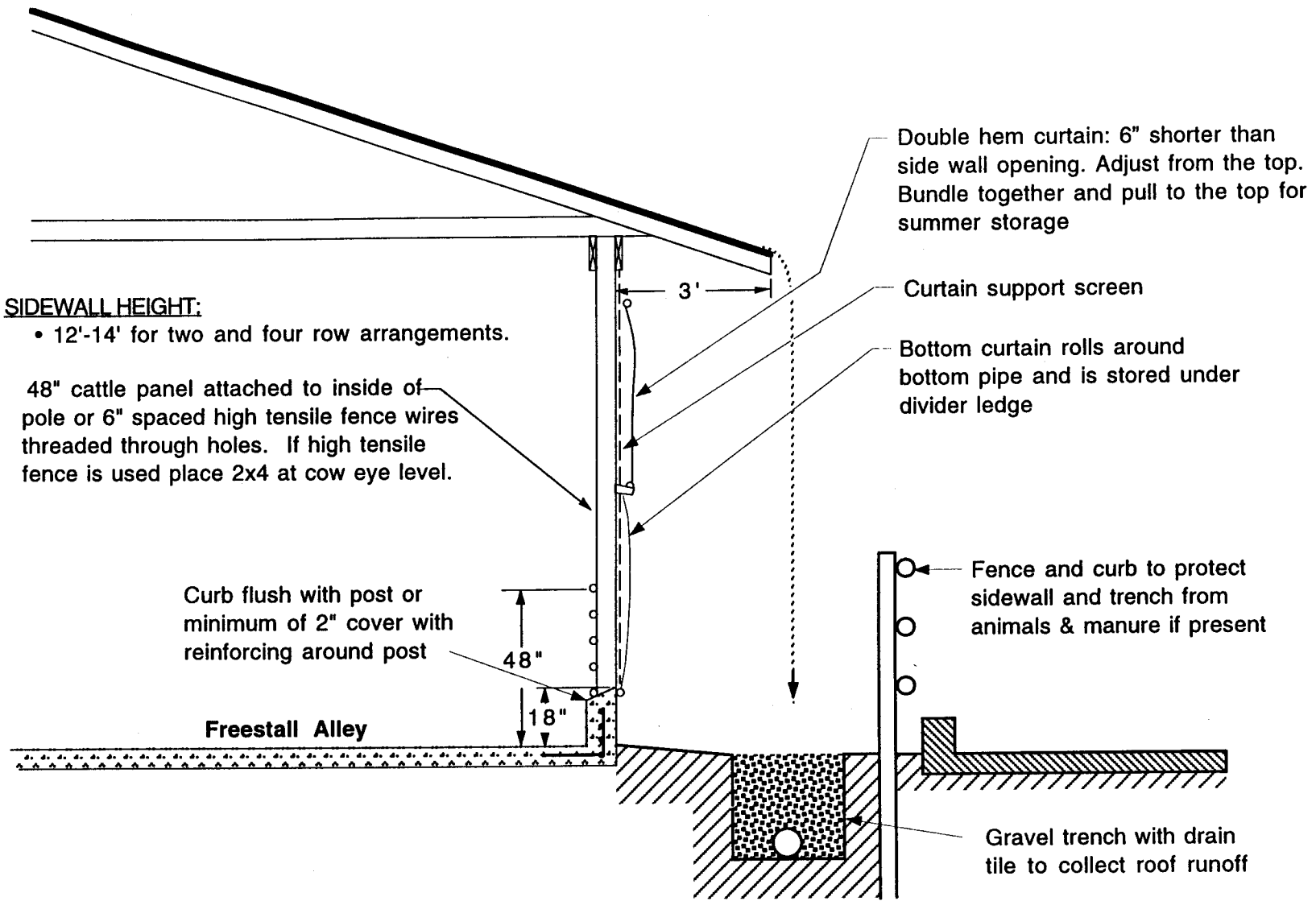
NRAES-63—Dairy Reference Manual (1995). \$40.00  
NRAES-37—Planning Dairy Stall Barns (1988). \$6.00  
NRAES-76—Guidelines for Planning Dairy Freestall Barns (1995). \$8.00  
NRAES-85—Penn State Dairy Housing Plans (1997). \$11.00  
MWPS-7—Dairy Freestall Housing and Equipment (1995). \$20.00  
(Contact office below for current pricing).

Order NRAES publications from: NRAES Cooperative Extension, B-16 Morrison Hall, Ithaca, NY 14853. (607)255-7654 fax: (607)254-8770 email: [nraes@cornell.edu](mailto:nraes@cornell.edu) [www.nraes.org](http://www.nraes.org)

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**SIDEWALL HEIGHT:**

- 12'-14' for two and four row arrangements.

48" cattle panel attached to inside of pole or 6" spaced high tensile fence wires threaded through holes. If high tensile fence is used place 2x4 at cow eye level.

Curb flush with post or minimum of 2" cover with reinforcing around post

**Freestall Alley**

Double hem curtain: 6" shorter than side wall opening. Adjust from the top. Bundle together and pull to the top for summer storage

Curtain support screen

Bottom curtain rolls around bottom pipe and is stored under divider ledge

Fence and curb to protect sidewall and trench from animals & manure if present

Gravel trench with drain tile to collect roof runoff

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Agricultural and Biological Engineering

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Ds. By: R.E.G.

Dr. By: J.T.T./W.K.M.

Ch. By: D.F.M.

**SIDEWALL - OUTSIDE ALLEY**

Date: 6/17/97

Sheet No. 1 of 1

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