Attached greenhouses. An advantage of attached greenhouses is that they usually have easy access, which makes it more convenient to attend to plants. ey can create an extension of your indoor living space, provide solar heating and add insulation to part of the house. ey usually have lower heating costs and lower initial construction costs because there is one less wall to build and

to greater heat loss. e freestanding greenhouse also has a higher initial construction cost than the attached greenhouse because it has an extra wall to build plus service line installation.

Greenhouse styles

Quonset. is is probably the most popular greenhouse style, mainly because it is relatively inexpensive and simple to build. Quonset-shaped greenhouses are constructed with bent pipe frames made of either metal or PVC. e exible trusses are o en anchored into sturdy metal pipe foundations. ey are covered with exible plastic lm, either a single or a double layer. A small fan usually provides air support for the double layer. An insulating double layer reduces heat loss, but it also reduces light penetration. Quonset-shaped greenhouses are lightweight, so they must be well anchored to keep them from being blown away. eir light construction also makes them susceptible to damage from heavy wind and snow.

High tunnels. High tunnels are similar in shape to Quonset-type structures, but they aren't heated and they aren't considered permanent. One of their unique features is that roll-up sides are used for ventilation and temperature control on sunny days. Crops are typically grown in ground beds. High tunnels have large doors to permit the use of tractor-mounted equipment in the house. High tunnels are considered season extension structures and do not provide the degree of climate control that

High tunnels have bent-pipe frames that are constructed of metal or PVC.

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such as polycarbonate, glass, acrylic or berglass.

Slant-leg. e slant-leg style is similar to the gable style, except that sidewalls are slanted slightly outward. is makes it wider than the vertical-leg gable style, providing additional oor space. Like the gable style, it has a at, sloping roof that sheds snow well, depending on the pitch. e slanting sidewalls

has high heat loss in cold weather. Many Quonset-shaped greenhouses have a double layer of plastic with an insulating layer of air between them. is reduces light transmission by about 10 percent, but it also reduces heat loss by 35 percent. Use only greenhouse-grade plastics. ey have additives that slow deterioration from ultraviolet light, are stronger and have infrared inhibitors that reduce heat loss. Greenhouse-grade plastics will last 4 to 10 years while other plastics will last only one growing season. Some materials also have anti-drip surfaces that reduce droplet formation from water condensing on the interior of the plastic lm.

Glass. e introduction of synthetic glazing materials has greatly reduced the number of glass-covered greenhouses, but in many ways glass is still the standard of comparison. It has high light transmission and good durability. Glass has the greatest longevity of any glazing material (25-plus years). Use low-iron glass for the highest light transmission and tempered glass for the greatest strength. Double-pane glass reduces the relatively high heat loss of glass, although some loss in light transmission also results. Glass must be installed and maintained to prevent air and water leakage between the panes. Modern glass greenhouses use rubber or vinyl gasket material below the edge-to-edge glass and bar caps over the top of the seam.

Polycarbonate. Polycarbonate is a rigid plastic covering that comes in sheets that have enough

greenhouse space and the ease of working within that space. Experiment on paper with di erent bench sizes and di erent patterns of benches and aisles to help decide on the best overall design. Benches must be strong enough to support the weight of plants and soil (or growth media) as well as the weight of

One drawback is that excess water must be applied; this makes up for water de ected by plant leaves and water that falls on areas where nothing is being grown. Also, wet foliage and higher humidity levels increase plant disease potential.

Drip systems. Drip irrigation systems might consist of individual capillary tubes for each pot or drip tape for ground beds. Drip irrigation uses water e ciently and keeps areas with no plants dry so that you can work around plants while they are being watered. Drip systems should be monitored to be sure they are

For more information

Bartok, John. 2000. “Greenhouses for Homeowners and Gardeners,” NRAES-137. Ithaca: Natural Resource, Agriculture, and Engineering Service

Biomass Greenhouse Handbook: https://www.akenergyauthority.org/Portals/0/Programs/AEEE/Biomass/Documents/PDF/317BiomassHeatedGreenhouseManual.pdf?ver=2019-06-18-123109-157

Greenhouse plans

University of Tennessee: https://web.utk.edu/~ggrandle/Programs/PlanList97.htm#Greenhouse%20Plans

Building Your First Greenhouse: https://itgrowsinalaska.community.uaf.edu/2022/08/11/building-your- rst-greenhouse/

Building Your First Greenhouse — In the Alaska Garden with Heidi Rader (YouTube) https://youtu.be/3jgv2UULSsg?feature=shared

www.uaf.edu/ces or 1-877-520-5211/907-474-5211

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