

Building codes and greenhouses

By Craig Humphrey

The National Greenhouse Manufacturers Association is focused on writing standards specific to greenhouses and assisting the proper authorities to ensure these structures are understood and treated correctly.

Over the past several years there has been a near universal adoption of some version of the International Building Code (IBC) in all states. The governing codes have actually changed very little, but the enforcement has increased along with the issues that building officials may want to address. Previously, growers may have only had to be concerned about snow and/or wind loads, but now other issues may be addressed including coverings, building sizes and

fire-related concerns.

For previous greenhouse projects you may not have had to obtain a building permit. Don't be surprised if a permit is now required. Municipalities and other government entities have had to deal with budget shortfalls due to the economy. One way they have found to generate additional revenue is through the enforcement of building codes that previously had exempted construction projects like greenhouses.

Permits and code changes may require that a grower construct a professionally engineered structure where previously a non-load rated greenhouse may have been allowed to be built. Make sure you and the local building official are clear as to the purpose of your expansion project to ensure the proper rules are being applied.

Building codes dictate, for example, what size structure is allowed along with the type of covering that can be installed. These codes govern fire safety issues and fire sprinkler requirements. There will be specific requirements for snow and wind loads for your particular location. Be aware that if it has been some time since

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you built a greenhouse, these loads may have changed and your old structures may not be considered sturdy enough to withstand current loads.

Previous building codes can be altered due to recent events that caused structure failures or exposed deficiencies in the code. An example of this is the snow storms that occurred this past winter along the eastern United States. The weight of the snow caused many greenhouses to fail resulting in collapsed and damaged structures.

Many of these damaged structures were manufactured by companies unfamiliar with U.S. weather conditions and were sold without considering U.S. building codes or the NGMA structural standards. The failure of these non load-rated structures could hurt the U.S. greenhouse industry if the loads are increased without proper investigation and comparison to the performance of NGMA-designed structures. The failure of these structures

could lead to an eventual increase in design loads.

BUILDING CODE BENEFITS

Greenhouse design can also benefit from building code language. An example is the reduction in the snow loads for greenhouses due to the heating of structures. Building code authors understand that greenhouses are covered with glazing materials that allow heat to rise and melt the snow that falls on the roofs, thereby preventing the snow from accumulating. There are restrictions on heat and covering types needed for this thermal factor reduction, but many greenhouses can qualify. A less insulated greenhouse roof compared to normal building construction may cost more money to heat, but it can result in savings on the structure design. The building codes and the NGMA standards reference this thermal factor reduction.



Growers should expect issues related to sustainability and energy efficiency will have an impact on some of their greenhouse-related projects.

If the greenhouse manufacturer uses the thermal factor reduction in the design of your structure, the heat needs to be turned on prior to a snow storm to raise the temperature in the house. You assume the responsibility to protect your investment as the reduced design may incur some structural damage during a storm. Check with your insurance carrier to learn its requirements related to design and operation during storms. If you are unsure whether a greenhouse manufacturer is using this reduction, you can request that the company has a professional engineer stamp and certify the design. NGMA has a certification form available for an easy comparison.

Production greenhouses that restrict public access benefit from building code language by receiving a load reduction due to a lower risk to life safety. Building codes don't always have a negative impact on greenhouse design. Professional

engineers and architects can help you determine the impact the codes have on the structure you are interested in building.

SUSTAINABLE CONSTRUCTION

The latest topics in construction projects are focusing more on issues related to sustainability and energy efficiency. Expect some of these same issues to have an impact on some of your greenhouse-related projects. The federal government, along with an increasing number of states, are putting more pressure on building departments to have new construction conform to energy codes that reduce the dependence on fossil fuels. Most states will be implementing energy codes that will influence building materials and systems.

The differences between commercial production and garden center greenhouses can be drastic depending on the particular location and weather. Commercial greenhouses are usually exempt from

conforming to energy code requirements due to their agricultural use. Retail garden centers fall into a different category and their requirements can be significantly different. Many times they must meet the same building requirements as other types of commercial construction.

The need for a design professional who has experience dealing with energy codes is a must. Greenhouse manufacturers must find ways to increase energy efficiency of their structures to meet the expected changes in code requirements.

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