



Controlled Environment Agriculture & Greenhouse Engineering Services

Institutional • Commercial
Garden Center • Residential

Greenhouses Designed to Optimize the Plant Environment

Optimized greenhouse design must first consider the needs of the plant or crop being grown or displayed in the greenhouse structure. Light levels, airflow, temperature, humidity, nutrients and watering requirements can all change depending on the crop and its growth stage.

Controlling these parameters, their rate of change, and maintaining uniformity throughout the growing space are critical to optimizing the plant environment and growth. An uncontrolled greenhouse can easily go from 20°F to 130°F in a few hours. Plants simply cannot thrive with wild swings in environment.

A greenhouse also needs to provide a safe, pleasant, and low maintenance environment for the workers and other personnel in the structure. Institutional, research and other public use greenhouses have additional life-health & safety issues that require special design of the greenhouse structure and equipment.



Deep Industry Knowledge Independent Advice

The engineers at GShort.com, LLC have extensive experience working in the greenhouse industry including multiple greenhouse manufacturing and system supply companies. We have relationships with many of the major structure and equipment vendors and have experience with estimating and specifying the best equipment for your project. Unlike some design teams, we are independent of the manufacturers and work directly for our clients. This enables us to specify the broadest line of products, and produce the most competitive bids. We regularly partner with other greenhouse design firms, and project architectural teams across the country.





Gourley Greenhouse, OARDC Wooster, Ohio after tornado damage, and the repaired structure with new curved glass roof.

Client Centered Complete Greenhouse Design

- **Services We Provide**

We specialize in engineering design services for commercial, garden center, institutional, and research greenhouse facilities. We offer services including site planning, feasibility studies, cost estimating, system specifications for both greenhouse and growth chamber facilities, building condition assessments, energy studies, and engineering design services.

Our professional greenhouse design services include the structure and glazing, mechanical, electrical and control systems, lighting, shading, ventilation, air conditioning, fogging, hydroponics, irrigation, fertigation, and mechanization of the greenhouse system.

- **How we work with Our Clients**

We bring our years of specialized greenhouse expertise to the design process for both new and retrofitted facilities. We have a strong focus on working with the client and other design team members early in the design process to determine the correct programming of the space.

We provide drawings and specifications for bidding with construction cost estimates based on multiple comparable past projects across North America with our partners.

- **Our Clients and Types of Projects**

Our client list includes architects, greenhouse operators, manufacturers, insurance companies, home owners, contractors, and institutions. We can design a wide variety of greenhouse facilities, ranging from plant production ranges, garden centers, compartmentalized research greenhouses, bio-containment greenhouses, conservatories and custom structures. These can be ground based free-standing structures, sidewall attached structures, or roof-top greenhouses. We have extensive experience with hydroponic vegetable production systems including NFT and media based systems.

- **Other Design Services Beyond Greenhouses**

We also design controlled environment agricultural (CEA) facilities such as mushroom systems, indoor grow facilities, factory farms, and growth chamber facilities. These design services include facility layout, material processing/ handling equipment, service requirements, automated irrigation systems and containment consideration.

We can provide greenhouse head house design services or work with your local design team to coordinate services.



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