

## Nursery Construction — Details are Everything®

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### INTRODUCTION

Nursery operations by nature require considerable developments of land and structures to grow, process, and ship products. These production facilities range from: can yards to greenhouses, warehouses, potting sheds, cold storage, loading docks, and office space. Although there are many commonalities, the facilities at each operation take on unique features specific to the needs of the nursery product and ideas of the nursery manager. Because these facilities are significant in size, cost, and longevity, it is critical that they are planned and constructed properly for long-term utilization.

Although each type of facility or structure is different, there are specific guidelines and procedures that are important to successful construction anywhere. The size and scope of the project will dictate the level to which these guidelines are followed.

### PLANNING

Primary to any project is to determine the scope of the project and your specific needs. Do you need a greenhouse, cold storage, canning yard, office space, shop, or a combination of these items?

Next, give consideration to location and placement with respect to: access, neighbors, utilities, future expansion, property lines and setbacks. Develop some idea of the overall size of the project in both square footage and dollars. This is also a good time to assemble basic information about the area where construction will take place. A fact sheet containing the address, legal ownership (title), legal description (Township, Range, Section, and Tax Lot #), a map showing the area, and zoning designation will be useful when applying for permits.

Early in the process, meet with local and county planning officials to get their opinion or insight about the project. They can give an overview of the process including necessary permits, costs, and time line you may be facing. Put together a large three-ring notebook to hold all information related to the project. Divide it into sections with tabs such as: planning, engineering, permits and approvals, progress, payments and lien releases, bids, contracts, utilities, cost recap, support systems, as-built plans, name and numbers, and other. This is a good place to retain names, numbers, and business cards for the many people associated with the project. The notebook makes it easy to carry everything to the job site with you for quick reference.

It's time to sit down with the appropriate parties in your organization (owner, managers, maintenance crew, and end users) to discuss ideas and needs that should be met. Give consideration to:

- Overall size and specific dimensions of critical areas.
- The type of construction (materials).
- Details like traffic flow, door needs, lighting, drainage, office space, heating, cooling, drainage, and parking.
- List all types of utilities needed.
- What colors you want.

Give careful consideration to the need for support systems and how they fit into the project. Special attention must be given to the utilities to feed these systems and their incorporation into construction at particular stages. Some of these systems might include: benches, racks, tables conveyors, fog, mist, or bottom heat, pumps, fans, vents, refrigeration, and soil mixing/potting machines. Some rough drafts or sketches may be appropriate at this time to get a better perspective of how things will fit together.

## **ENGINEERING**

An engineer can play many roles depending upon the complexity of the project and comfort level of the client. Examples include:

- Consulting and ideas only.
- Engineering and calculations.
- Design and plans.
- Assistance with code compliance and clarification.
- Bid specifications and bid review.
- Job site inspection.
- Overall project management and review.

All plans and specifications should be reviewed, questioned, and checked off once resolved.

Design/build is another approach when you work directly with a greenhouse company, irrigation contractor or general contracting firm. In this process you convey what you want and the company develops the plans, works with an engineer, and submits the scope of work to you along with a price.

## **APPLICATIONS, PERMITS, INSPECTIONS, AND APPROVALS**

Throughout the process, there is an endless stream of paperwork and fees. It ranges from site review, plan review, and general building permit, to electrical, plumbing, and mechanical. There are fees associated with these applications. Once work begins and progress is made, inspections are necessary for progress to advance to the next stage. Occasionally, corrections must be made to obtain approvals. These are important for quality construction that meets code and protects your investment.

Periodic testing of certain construction materials and components such as concrete and bolts are performed by certified testing companies on larger projects. A final approval on “occupancy” must be obtained at the end of most projects before use can occur.

## **SELECTING A CONTRACTOR OR VENDOR**

A consultant or engineer can make suggestions or recommendations for companies for whom they have previously worked. Recommendations from other nurserymen is an option. Regardless of how you are introduced, a thorough review of the company is important. Set up a meeting and ask for information about the company. Make sure the company is licensed, bonded, and insured. Also request a list of references and work they have completed over the past 5 years. Follow up by contacting the references and asking how the job went and if you could visit the site to review workmanship and overall construction quality.

Interviewing several companies will give you a better feel for making your selection.

## PLANS AND ENGINEERING

Whether you do the work yourself, hire an architect/engineer, or use a design/build firm, it's time to get the project on paper. This includes plans, calculations, scope of work, and rough cost estimates. These items enable you to get final bids, go to the Department of Planning, or simply start making purchases and securing vendors. If you secure bids, they must be carefully reviewed to insure that all aspects of the project are covered.

The assistance of an engineer or consultant can be helpful on large projects — caution, low bid may or may not be the best choice. Upon review of the scope of work and plan details, develop questions to be clarified. Also ask for a work schedule time-line. Before signing the contract, set in writing and come to agreement on items like:

- Start up and completion dates.
- Using written change orders for additions and subtractions.
- Lien releases.
- Payment schedules.
- As-built plans.
- Lines of communication.
- Exchange of hazard communication information.

Don't burn bridges with the companies that are not selected for the work.

## CONSTRUCTION

Stay in touch with the work progress, it is critical in order for you to:

- Know that the project is on the time schedule you agreed upon.
- Be able to approve progress payments.
- Assure that work is proceeding according to plans and scope of work.
- To track location of underground utilities.
- Monitor job site safety.
- Understand possible modifications to the work — “change orders”.
- Know what level of work should be covered by lien releases.
- Anticipate when inspectors are needed.

## PROJECT MANAGEMENT

- Walk the job site regularly, both when work is being done and after hours when there are no distractions (make notes about questions or concerns you may have).
- In your notebook, maintain a log with names, dates, and description of activities as progress occurs.
- Take photos of the project at various stages to document progress and to show structural issues that may need to be referenced at a later date.
- Discuss any concerns with the contractor or vendor as soon as possible. Refer to plans and scope of work for details.
- If changes need to be made, utilize a “change order” to define details of work and costs. Also, modify plans to show changes.
- Utilize the notebook to file all papers relating to the project.
- Request originals or at least copies of all inspections and test/certification results.

- Take measurements and photos to utilize in drawing up the final “as-built” plans.
- Stay in communication with the job superintendent or contractor to insure that everyone is in tune with the details. If issues arise, address them immediately before the project moves to another stage.

## FINANCIAL MATTERS

Establish clear procedures for the payment and designate the person in your company who has the authority to approve payment and sign paperwork (contract, change orders, payment vouchers). Also set up procedures to monitor all costs associated with the project. This includes the main contract as well as support systems and equipment incorporated into the project.

Notify your insurance agent about the construction and ask that it be included in your policy. Establish the total value of the project, then update the agent with the value of the project at various stages of completion.

When making progress payments and final payment, insist on “lien releases” from subcontractors and vendors that are being paid for materials, equipment, labor, and costs completed to that point in time.

Upon completion of the project most contractors will invoice “short” of the total until all final details are buttoned up. It is wise to hold some money in reserve to insure that everything is finished timely and to your satisfaction.

It is a good practice to demand proof of liability and workmen’s compensation insurance from the contractor. Have it mailed or Faxed directly from the insurer and tell them you want notification if the policy is not in force.

## OTHER ITEMS

Document in your notebook all names, brands, and codes for items such as: paint, stains, fabric, wall paper, counter tops and flooring, locks, fixtures, etc. You will need this at some point to make repairs.

Insist on tracer wire being buried along side of all underground utilities.

At the end of the project, walk the entire job and develop a “punch list” of details to be resolved prior to final payment made.

You may desire that particular subcontractors or vendors be utilized on the job. Specify this prior to letting bids.

Ask the contractor for a list of all subcontractors and suppliers of materials along with addresses and phone numbers.

## FINAL DETAILS

Perform a final recap of all costs associated with the project. They can be subcategorized into: utilities, consulting and engineering, building structure, permits and fees, supports systems, and equipment. You can then obtain square footage costs for subcategories and the project as a whole.

On a sizable project, the general contractor will present you with an “Owner’s Manual” that contains technical data and specifications for critical materials, parts, and equipment.

This should also contain the warranties on craftsmanship and major components such as roofs.