

## **Should You Consider Modular Construction? 20 Questions to Ask Yourself Before You Build or Expand**

**Asking the right questions is the first step in ensuring a successful facility planning process.** When your business, school, or organization has outgrown its current facilities and you're facing the decision of whether to build a new facility or expand your existing space, where do you start? What are your choices? And, how can you be sure you've thoroughly considered all of the options and ramifications that each one presents?

Ramtech Building Systems, a modular construction leader in the design and construction of commercial and institutional facilities throughout the Southwest, has created this guide to assist you through the decision making process. When you're ready to build, Ramtech and our staff of trained design and construction professionals are ready to help you create and build the right facility for your needs.

### **FACILITY / SPACE REQUIREMENTS**

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#### **1. What are the financial considerations of building onto our current facility/site versus building at another site?**

Along with the hard costs of the expansion, the existing facilities may require an additional investment on your part to meet code compliance. Any expansion of an existing structure, should consider potential costs associated with:

- New sprinkler systems, fire separation walls, and/or upgrades for ADA compliance (handicap accessibility).
- Additional parking to accommodate the growth
- Upgrades to building facades or landscaping to meet updated zoning ordinances.
- Depending upon the age of the building, potential remediation of hazardous materials such as asbestos or lead-based paints.

Expansion of facilities through the use of permanent modular construction (PMC) or using relocatable modular buildings (RB) is, in most cases, more efficient, less costly, and faster while creating fewer site disruptions.

#### **2. When developing a timeline for facility expansion, what do we need to consider?**

Depending upon the type and size of the proposed building, the type of construction you choose will determine the building timeline. Conventional construction utilizing an outside architectural firm is usually the lengthiest method. Design-Build utilizing a company with integrated design and costing functions can save you between 10 – 25% during the design and costing phase. The use of modular construction techniques can usually save 25 – 40% in time compared to conventional stick-built construction. In fact, in some cases the time required to select a design team, design the project, go through the bidding process, then select the contractor and obtain the permits will take longer than the actual construction itself. Selecting a firm which offers all or most of these

services can substantially shorten your timeline. Use this checklist as a reference when interviewing potential builders.

- Selection of an architect or design-build firm
- Pre-planning that includes discussion with the city for zoning, parking, fire lanes, utilities, building setbacks, approved exterior cladding materials, landscaping, etc.
- Building designs
- Civil site designs
- Selection of a contractor if a Design-Build firm is not selected
- Permitting time required for the City and in some cases State and Local Agencies

### **3. How do we decide how much space we need?**

An architect, space designer, or design-build firm are best qualified to determine the amount of space required. For general office use, hallway space may be minimized through the use of modular furniture and open concept planning. For small office facilities, 200 square feet per person is usually adequate. For educational occupancies, you'll want to refer to your state's education authority for minimum classroom sizes. Beyond the prescribed size of the classroom, generally 25% of additional area should be allocated for ancillary areas such as restrooms, hallways, etc. Since there is no rule of thumb covering every use, consideration should be given to:

- Expecting that the new spaces will require additional toilet rooms and possibly an additional janitor's closet, all needing to meet the latest ADA requirements.
- Allocating space for adequate egress, hallways, storage areas, I.T. closets, conference rooms, and special use rooms.

Ramtech has an extensive catalog of standard floor plans covering education facilities, general office space, and healthcare applications. While these floor plans might not meet your needs exactly, they're generally a good starting point to help in designing your building layout.

### **4. We're ready to proceed, what's the first step?**

- Connect with an architect or design-build firm.
- Establish a budget for the project (see next section; Financial Considerations)

Most reputable firms should be willing to provide a preliminary budget and conceptual floor plan at little or no charge. Ramtech offers our **Free Project Planning and Budgeting Service** to all our potential clients which consists of a floor plan, building specifications, and a rough order of magnitude budget.

### **5. What do we need to proceed?**

Once a design firm or design-builder is selected they can provide a Design-Build Institute of America or AIA contract, or the owner can hire a construction attorney to draw up a contract. Both types of contracts protect the interests of the owner as well as the architect, contractor or design-build firm. For design-build construction, Ramtech utilizes a two-step approach where a stipulated sum is agreed upon for pre-construction

services which is normally less than 5% of the anticipated project cost. The pre-construction services include surveys, geotechnical investigations, the design work suitable for qualified pricing of the project, a stipulated sum for the actual construction work, and a critical path project schedule that defines all the work elements and outlines the project's duration. This allows the owner to know exactly what the project's final costs are before a shovel hits the dirt. Ramtech's approach to design-build takes the guesswork out of the equation and offers the owner a safe, risk-free way to execute a design-build project.

## **6. What are some possible problems we might encounter?**

The most common problem involves an owner's significant investment in a design, then they find out it is not within their established budget. This primarily occurs with the design-bid-build approach to construction. Under this scenario, true costs can only be determined after competing contractors bid on the project. Unfortunately, this is well after a commitment for design costs has been made. More times than not, problems during the actual construction are site related rather than building related. Virtually every site offers unique challenges that only become apparent after geotechnical and civil surveys have been conducted. To totally vet out a site, the following will be needed:

- Performing a geotechnical investigation consisting of soil borings. From that, a lab analysis will be conducted resulting in a soils report that defines the soils' structure and characteristics at various depths with an engineer's recommendation for the type of foundation that can be used.
- A topographical plan showing the elevations across the site that will be used to develop the grading plans.
- A plot plan showing the property lines, building locations, parking requirements, and related site construction elements.

## **FINANCIAL CONSIDERATIONS**

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### **7. How do we finance our project?**

- Conventional financing can be used if the project is real property containing both land as well as a building. This includes short-term (generally five years) bank financing or long-term (usually 15 – 30 year terms) conventional financing.
- If the project is modular, then in addition to the above purchasing options, personal property leasing is available including operating leases, capital leases, or leases with an option to purchase. These leases would be independent of the real property financing and are typically up to terms of five years in length. Longer leases are also sometimes available.

### **8. What do we do if we only need the space for a fixed time period 1, 2 or 3 years?**

There are two primary options to consider:

- Lease the space off-site.
- Lease a modular building to be placed on-site.

As stated previously, leasing options are usually available from one to five years or even longer. Operating lease rates for modular buildings are determined by the cost of the building and to what degree it's customized to meet the owner's needs. The more standard a building is, the lower the monthly lease rate will be. This is driven by how likely it will be to re-lease the building as originally configured. In short-term leases, the owner should expect to pay for the building's installation and removal costs. For longer lease periods, these costs may be capitalized into the lease rate. For leases of three to five years, greater flexibility may be available for all sizes and different uses of custom modular buildings.

### **9. How does the cost of modular construction compare to conventional onsite construction?**

No form of construction is best or least expensive all the time. For comparison, you should consider the design, building construction, site construction, and opportunity costs. If time is not critical, then only the interim construction cost might be considered. If revenue or profits would be maximized by a reduced construction time, that should be considered in determining the construction method. For modular construction where the majority of the building fabrication is performed in a manufacturing plant, it is typically less expensive:

1. For remote or rural areas where site contractors are not as prevalent.
2. Than in high labor cost areas like military bases or where there is heavy unionization.
3. Where less site work may be necessary versus that required for traditional onsite construction.

Although temporary or relocatable modular buildings are usually less expensive than permanent modular construction, PMC will provide you with a greater number of choices on building finishes and layouts.

### **10. How do we protect ourselves against cost over-runs and change orders?**

While there is always a chance for change orders or additional costs, through proper project planning these costs can be minimized. In general, the most common change orders deal with hidden conditions or differing sub-surface conditions. These changes usually affect the foundation design. This change order can be virtually eliminated by obtaining a geotechnical investigation consisting of soil borings, lab analysis, and a soils report that clearly defines the soil structure and its characteristics at various depths. This will then be taken into consideration for the foundation design along with other subsurface conditions that can affect the contract amount including:

- Shallow rock formations which could affect the utility installation.
- Unexpected subsurface contamination (buried fuel tanks, etc.) that must be removed and cleaned up.
- Shallow subsurface water levels which may require the foundation piers to be cased.

Be prepared to spend the time required early on to analyze and make decisions when presented with these challenges. Changes to designs are much less expensive if addressed up front before construction begins.

### **11. How do we make sure we get what we want?**

In short, make sure the design-builder or architect prepares detailed drawings and specifications. Also ask for each of the material samples, cut sheets, or possibly mock-ups of the assemblies. This will assist you in making the best choices, insuring you receive what you expected while significantly reducing the number of change orders from subcontractors who bid something other than what you wanted.

## **DESIGN CONSIDERATIONS**

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### **12. How do we begin the design process?**

Your architect or design-builder will advise and guide you through the design phase. Most of the time it begins with a 'Programming Session' also known as a 'Design Charrette'. This will be a general discussion on what you would like to accomplish with the new building, the look you are expecting, how many people will it need to accommodate, what your budget is, etc. To help prepare for this important first step, consider the following questions:

- Are there limitations to the design (size of rooms, exterior finishes, interior finishes, ceiling heights, open spaces without columns, etc) in any way?
- Are there local building restrictions? Deed restrictions? Planning and zoning requirements? Local ordinances addressing trees or landscaping?
- What are the most appropriate materials and finishes for aesthetic purposes or maintenance?
- Are there special needs for data, voice, or controlled security access systems? Do these potential systems affect HVAC design with certain temperature or humidity ranges? Are there any special acoustical (sound deadening) requirements? Will a central building energy management system be utilized? Must there be sustainable features incorporated into the construction, possibly to achieve a LEED certification?

### **13. Can we maintain a continuous look or design when building or expanding on our existing site?**

In most cases, whether adding on to an existing building, constructing a permanent stand-alone facility, or providing for an interim use with a relocatable modular building, matching the look of an existing adjacent structure should not be a problem. A qualified design-build firm or architect will have the resources necessary to complement or match the surrounding architecture and landscape as well as being able to blend masonry, stucco, metal, or other types of exterior cladding.

### **14. What advantages are gained from the design-build delivery method?**

With a trusting relationship with a design-builder in place, the advantages of utilizing design-build include:

- A reduction in time since the pricing process happens in conjunction with the design process.
- Reduced design costs since many design-build firms have internal design personnel. Ramtech's design department includes an architect registered in all the states we do business in.
- Lower construction costs since the designers work closely with our estimators during the design phase to insure that the building that is designed stays within the budget constraints established by the owner.
- Less tension on the job by having one entity responsible for both the design and construction thereby eliminating finger pointing.

### **15. How much will it cost to have someone just design our building?**

An architect's charges usually include all project related design costs such as:

- Architectural designs and specifications
- Building engineering designs including structural, electrical, plumbing, and mechanical systems.
- The site civil design including building placement on the site, grading and drainage plans, utility plans, handicap accessibility plans, pavement, and landscaping.

The costs of these designs vary dramatically depending upon the size of the building and the related engineering (particularly the civil designs) that must be completed. A total design charge of 8-15% of the project cost is fairly typical.

### **16. Since costs are not finalized before construction commences when using typical design-build contracts, is there a safe, low-risk approach to design-build that can prevent this from happening?**

Ramtech takes a unique approach to design-build that encompasses three steps.

- Our ***Free Project Planning and Budgeting service*** is offered to all our potential clients. Once we understand your needs, we will develop a floor plan, building specifications, and a rough order of magnitude budget (making assumptions based off historical data for the site work elements) for the work.
- Providing preconstruction services is the next step. After reviewing the free project planning and budgeting proposal, should you wish to move forward with the project we will enter into a stipulated sum contract for preconstruction services. This builds on the free project planning and budgeting proposal by taking the designs to a roughly a 60% completion level. As part of the design work, Ramtech will commission a civil and geotechnical engineer to conduct the site surveys and investigations necessary to know exactly what challenges the site will offer. Their work will be combined with our in-house design teams work on the building's design. Once the design package is sufficient to send out for bids, Ramtech's estimators will generate a scope of work and gather firm bids on

every aspect of the work. This information is assembled and presented to the owner as a Lump Sum Pricing Presentation (LSP) for the construction.

- The construction phase is the final step. After reviewing and agreeing to the LSP, the stipulated sum contract will be modified through a change order to reflect the total project (design and construction) amount. You'll know exactly what the total project costs are before a shovel ever touches the dirt. In the event the LSP is not accepted, the owner is only responsible (normally 3-5% of the project's value) for the preconstruction services fee.

## **PROJECT MANAGEMENT CONSIDERATIONS**

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### **17. Who should provide building plans and specifications? Permit applications? Site plans and civil drawings?**

While it is often more cost effective for the owner to handle permit applications and site plans on small projects, on mid-size or larger projects it rarely saves the owner money. The design-builder, architect or general contractor is usually more experienced in working with the city planning department on permitting, and with the civil engineering firm on site design issues. The other questions to ask are:

- Who will acquire the state and/or local approvals and building permits? Arrange for inspections? Obtain the 'Certificate of Occupancy' required before moving into the building?
- What work elements might we be comfortable in taking on ourselves? What services or scopes of work do we want to contract out and from whom?

### **18. Who will oversee the work and assure its timely progress and completion?**

The design-build firm will provide a full-time project manager and a full-time site superintendent to manage the entire project. The superintendent is the eyes and ears on the project and supervises all of the local sub-contractors, while the project manager administers the overall project by issuing subcontract agreements, scheduling material deliveries, as well as coordinating the efforts of the design team, permitting process, inspections, and other critical project milestones. If an architect is hired to design the project, the owner can either provide their own construction manager or hire the architect to act as a liaison between the owner and the general contractor.

### **19. How can we make sure we're getting a reputable builder?**

Check the architect's, design-builder's or general contractor's references. It is important to ask the following questions:

- What are the limits of your professional liability (for design liability issues) coverage?
- What are the limits of your all-risk (covering the building while under construction) insurance?
- What is your safety record? Do you have any current OSHA violations?

- Have them provide five references of projects they have completed in the last three years of comparable size and scope.
- What are your bonding limits and can you bond the project? Obtain the bonding agent's name as a reference.
- Is the surety company AAA rated?
- Have you ever defaulted on a contract or bond? Has your management team ever filed for bankruptcy?
- What is size of your bank line of credit? Obtain the banking officer's name as a reference.
- Can you provide resumes for each of the design professionals, project manager, and site superintendent that will be assigned to the project?

**20. Is it reasonable to expect the builder to address the desired changes and provide warranty repairs after we have moved in?**

Full-service design-build construction companies have greater warranty control than other contractors. Generally, a one-year warranty on the building materials and workmanship should be provided.

## **GETTING STARTED**

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**Okay, we're ready to plan - where do we go from here?**

Let Ramtech's design-build experts answer any questions you have to assist you in preparing for your upcoming building project. Our goal is to help you maximize your budget and achieve the premium facility you're looking for.

**Contact us and one of our facility specialists  
will get in touch with you right away:  
(817) 473-9376 or [sales@ramtechgroup.com](mailto:sales@ramtechgroup.com)**