GUIDE TO REMODELING AND HOME IMPROVEMENT™

Massachusetts Edition

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Mount Vernon Advisors (MVA) is a multi-disciplined real estate consulting and design company. Through its Real Estate Division, the company offers practical advice, useful information and guidebooks on family real estate matters including: mortgage financing options, buying a home, selling a home and home remodeling and improvement.

Embarking on a home renovation or addition can truly be a painless, cost-effective and satisfying experience. This guidebook provides useful information on how to prepare for and successfully complete a home improvement project. It provides tips on important components of the project such as setting a budget, understanding the construction process, selecting qualified professionals and knowing the basics of a construction contract. You'll also find checklists, interview forms, important phone numbers and other useful information.

Sincerely,

Peter Tedesco
Author
President, Mount Vernon Advisors, Inc.

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1 THE CONSTRUCTION PROCESS

The construction process can be broken down into five phases. The larger and more complicated the project, the more formalized these phases become. In this chapter, we will describe the five phases of a construction project as well as what you and/or your architect's or construction representative's responsibilities are during each of these phases.

Note: *The information contained in this section is for illustration purposes. The manner in which most elements of the construction process is handled will be defined by the Contract Documents (as defined in Chapter 3) and the contract for construction.*

PHASE I ~ PRE-CONSTRUCTION PLANNING

The pre-construction planning phase of a project involves establishing a budget, obtaining local land use approvals, conducting site and subsurface investigations and developing a preliminary design. At this stage you want to get a good idea of what the scope of your project will be and identify most of the major project costs. See Chapter 2 for more information on the pre-construction planning process.

- **Land Use Approvals:** Your architect, construction representative or contractor will assist you in obtaining any land use approvals required for the project. All land use approvals must be in place before a project can begin.

- **Site Investigations:** You, your architect or your construction representative will recommend any site investigations that need to be performed and recommend the appropriate professional to perform them.

- **Conceptual Design:** The architect, draftsman and/or contractor will take your project program and begin to develop spatial relationships culminating with the development of a floor plan.

- **Review Budget:** Once a design is formulated, contact contractors to get an idea if the budget is adequate for your project. At this point, if there's a gap between the two, either the project will be reworked or the budget will be increased.

PHASE II ~ DESIGN

During this phase, the designer takes your preliminary design ideas and develops detailed plans and specifications which are used by contractors to bid the job.

- **Develop Plans and Specifications:** Once a preliminary design is approved, the architect, draftsman or contractor will prepare the Contract Documents (plans and specifications). During this process you will have input into the types of colors, textures and quantities of materials you want. The architect or draftsman will work closely with you as the design becomes more formalized and as decisions need to be made.

- **Estimate Project Cost in Detail:** The more developed the plans and specifications, the more accurately the contractor will be able to estimate project costs. If costs begin to exceed your budget, you and your architect or construction representative will suggest changes to the design that will help to keep the project within budget.

- **Establish Contingency Funds:** Since construction is an imperfect science, you should set aside additional funds in the event the project runs over budget. These extra funds are known as the contingency. Your architect or construction representative can suggest an appropriate contingency given the size and complexity of your project. Contingencies of 10% to 20% are common.

PHASE III ~ BIDDING

This phase includes bidding out the project, evaluating each bid, selecting a contractor and preparing a construction contract.

- **Solicit Bids:** You or your architect will solicit bids from contractors. Your architect or construction representative will prepare bid forms and send each bidding contractor a set of plans and specifications for the project. Contractors will visit the property before they make final bids.

- **Evaluate Bids:** You or your architect will evaluate all bids. Your architect will give you his or her opinion of each, but the final selection of the contractor is up to you.

  Tip: *In some instances, the contractor submitting the lowest bid should not be the contractor who is selected. A contractor may submit a low-ball bid just to get the job, then partway into the project inform you he or she can't finish the job and attempt to re-negotiate the contract.*

- **Prepare Construction Contract:** You and your architect will prepare and execute a contract for construction between you and the contractor. This contract sets out the contractual obligations of the contractor and the architect, if any. The Contract Documents are usually incorporated into the construction contract and describe the work to be performed.

- **Confirm Insurance:** You or your architect should confirm is properly insured. The builder's insurance requirements should be incorporated in the Contract Documents and construction contract.

- **Define Project Schedule:** You and your architect or construction representative should ask the contractor to submit a project schedule.

- **Establish Retainage:** During construction, the contractor will request payments for work performed, usually on a monthly basis. You and your architect or construction representative will authorize payment of those funds to the contractor, less "retainage", which is a percentage of the contract amount (usually 5% to 10%) which is "held back" from the contractor until the project is completed. This retainage is your insurance that the contractor will finish the job.

PHASE IV ~ CONSTRUCTION

This phase of the process involves the actual construction of your project. This phase will involve a lot of your time in terms of reviewing and inspecting the contractor's progress, approving contractor's requests for payments, selecting and approving materials, and discussing changes in scheduling or materials (i.e., change orders), even if you have retained an architect or draftsman.

- **Inspect Project:** You or your architect should make periodic visits to the project site to confirm that the work conforms to the Contract Documents and that construction is progressing according to the Contract Documents.

  Periodic inspections allow you (and/or your architect or construction representative) to identify defects in materials or quality of work as well as give the contractor an opportunity to timely correct the defect. Inspections should be done formally and as frequently as required by the complexity of the job. If you are uncomfortable about making inspections and accepting work in place, consider retaining a construction representative such as a home inspector or contractor (not involved in the project) to make inspections with you. If you have hired an architect, he or she can assist you in the inspection process.

  Tip: *The building inspector will also make periodic inspections of the project to be certain the work in place conforms to all building, electrical, plumbing and fire codes. It is the contractor's responsibility to coordinate these inspections. If defects are detected, the contractor must correct the problem at his or her own cost without disruption to the project schedule.*

- **Review Progress:** You or your architect should hold regularly scheduled job meetings with the contractor to review construction progress, resolve disputes and monitor construction schedules. You or your architect should keep minutes of such meetings.

- **Authorize Payments:** You or your architect (or bank representative, if a construction loan is involved), will make period payments to the contractor (usually monthly) based upon you or your architect's evaluation of the work completed. The contractor will submit his or her request for payment each month; you or your architect will review the contractor's request and, if there is disagreement on the amount of payment, you or your architect has the right to reduce the contractor's payment.

- **Approve Materials:** Throughout the construction period, you or your architect will review equipment and materials submitted by the contractor to determine their conformance to the specifications. If sample materials are determined not to be of equal quality to those specified, then you or your architect may reject the submittal and the contractor must re-submit materials and equipment which meets the specifications.

- **Change Orders:** During construction, changes to the project plan may be needed because of unforeseen conditions, material unavailability, changes in design and/or oversights. Under any of these conditions, the contractor will request additional funds to compensate him or her for the change. The contractor will complete a change order form, which you or your architect will review. The architect, if you have retained one, will then recommend to you either that the change order be paid or denied. The contractor will request a change order under any of the following circumstances:

- Subsurface physical conditions (such as ledge, hidden pipes, water or poor soil bearing capacity) that differ materially from those indicated on the Contract Documents.

- Work required but not shown on the plans. Sometimes a contractor will argue that work which needs to be done is not shown on the plans, arguing that because it was not shown, he did not include the work in the budget and therefore is entitled to additional fees. For example, the plans indicate that the contractor is to remove and replace the floor. However, when the contractor removes the floor he notices that some of the floor joists are rotted. Because the contract documents did not require the contractor to remove and replace the floor joists (and you or the architect had not reason to suspect that they were rotted), the contractor is entitled to a change order equal to the cost of labor and materials required to remove and replace the rotted floor joists.

- Unknown conditions that differ from what was shown on the Contract Documents. For example, a wall that needs to be removed may have heating pipes behind it. If the plans do not indicate pipes within the wall, the contractor is due additional compensation for removal of those pipes.

- Changes in product availability. If the contractor can't get a certain material specified in the contract documents because of shortages or discontinuation of production, he may have to substitute another product which costs more.

The owner may also request change orders. Sometimes an owner will change his or her mind about a product or material and want to substitute something else. In this case, the owner will ask the contractor to prepare a change order if there will be additional costs involved.

PHASE V ~ PROJECT CLOSEOUT

Project closeout involves making sure the project is fully completed to your satisfaction. The leverage you have in being certain that everything is completed is the retainage, usually 5% to 10% of the contract amount.

- **Substantial Completion:** When the project is close to being completed, the contractor will request that you and your architect designate the project "substantially complete". If you and/or your architect agree that the project is complete except for some touch-up and/or fine tuning, the architect, you and the contractor will walk through the project and list items or systems that are not 100% complete or have not been satisfactorily installed. This list is called a "punch list". The contractor is given a certain amount of time to complete all punch list items and will not be paid his retainage until the punch list is completed.

- **Certificate of Occupancy:** A new addition or renovated space can't be occupied until the local building inspector issues a Certificate of Occupancy (CO). This certificate certifies that the building or addition meets all applicable building codes. You or your architect will generally coordinate the issuance of a CO.

- **Project Completion:** You or your architect should require the contractor to complete the following steps before the project retainage is released. The project will be deemed complete when all of the following items are addressed:

    - Complete all punch list items.
    - Submit material and equipment warranties and manuals.
    - Submit contractors lien releases. These releases certify that any subcontractor and/or material supplier has been fully paid by the contractor. The lien releases protect you against any claim by a subcontractor for lack of payment.
    - Submit "as built" drawings. The contractor is to provide a set of drawings which show the project as completed.

2. PRE-CONSTRUCTION PLANNING

- Develop a Building/Renovation Plan
- Preliminary Meeting with the Building Inspector
- Establishing a Budget
- Contingency Funds
- Land Use Approvals
- Site Investigation
- Hazardous Materials
- Develop a Project Schedule
- Cost Versus Benefit of the Project
- Financing Considerations
- *Helpsheet 2-1 ~ The Pre-Construction Checklist*
- *Helpsheet 2-2 ~ Building Inspector Questionnaire*

2 PRE-CONSTRUCTION PLANNING

Once you have decided to undertake a home renovation or addition project, you should begin the pre-construction planning process. You should: 1) develop a building/renovation program; 2) establish a budget; 3) identify any land use approvals that may be required; 4) conduct site investigations; 5) develop a project schedule; 6) consider the cost versus benefit of your project; and 7) identify financing options. Each of these elements of the pre-construction planning process are discussed below. Helpsheet 2-1 is a pre-construction checklist which summarizes the information contained in the chapter to assist you in organizing your project at the onset.

DEVELOP A BUILDING/RENOVATION PLAN

The first step in the planning process is to develop a physical plan/layout of your addition/renovation project. To get ideas for your renovation or home expansion, we suggest looking at the homes of friends and neighbors who have recently completed a similar home improvement project. Also, there are a number of widely available magazines with home improvement ideas and plans available at bookstores, grocery checkout counters and home improvement centers.

Tip: *If the project involves structural changes to the home such as taking out or adding walls or floors or putting on an addition, you should consider hiring an architect, draftsman or design/build contractor to prepare building plans for you. Only by developing a plan can you begin to understand what your project will involve and how much it may cost.*

PRELIMINARY MEETING WITH BUILDING INSPECTOR

As you begin to conceptualize your building or remodeling project, you should take the time to meet with your local building inspector. Some local building inspectors require that building plans be prepared and stamped by a registered architect or engineer for any project that involves structural changes to an existing dwelling. The local building inspector has a great deal of authority in determining what your project will require in terms of building plans, building code compliance issues and use of licensed architects. Helpsheet 2-2 is a Building Inspector Questionnaire which will help you determine what land use approvals, building plans, compliance with building codes and inspections your project may require.

Tip: *Building inspectors are generally difficult to pin down for a meeting as they spend a great deal of time outside the office. It is best to call them first thing in the morning to set up a meeting.*

ESTABLISHING A BUDGET

It is important to establish a budget at the start. You should consider working with an architect or draftsman to help you develop your building program and to develop a schematic plan of your project before establishing a budget. Using this information, you can then determine if your budget is realistic. It is at this early stage that you should begin to close the gap between what you are willing or able to spend and what you hope to build. Set forth below is a list of sources which you can use to assist you in establishing a budget:

- **Friends and Neighbors:** People who have completed projects similar to what you are considering may be a good source of information about how much the project may cost.

- **Contractors:** Many contractors will be happy to give you a ballpark figure on the probably construction costs for your project.

- **Cost Guides:** *Remodeling Magazine* is a great place to start when trying to get an idea of what a home renovation project will cost, what issues you may encounter, and how it may affect the resale value. *Remodeling Magazine's* annual "Cost vs. Value Report", printed each November, contains the average cost versus resale value of various home improvement projects. It provides information on the costs for various home improvement projects. Copies of the Cost vs. Value Report can be obtained from www.remodeling.hw.net.

  A second popular cost guide is R.S. Means Company's "Interior Home Improvement Costs". The book contains the average cost for 65 popular remodeling projects. The costs include all materials and the contractor's overhead and profit. Furthermore, the costs are adjusted for price variations in different parts of the country. Copies of the Interior Home Improvement Costs can be obtained from the publisher (R.S. Means Co.) for $24.95 plus shipping. www.rsmeans.com.

Note: When developing a budget, most people think in terms of what a contractor will charge for the project. However, there are additional costs you should factor in when establishing your budget, some of which are listed below:

- **Design Fees:** If you hire an architect, draftsman and/or a design/build firm, you will incur design fees. See Chapter 4 for a discussion of your design team options.

- **Hazardous Materials:** If your home contains any hazardous materials such as lead paint or asbestos you will have to budget for its removal. Most contractors exclude the removal of these substances from their contracts.

- **Changes:** Most projects have changes during construction, either initiated by the homeowner or requested by the contractor, which can increase the cost. For example, you may want to substitute wood flooring for carpet. Therefore, you want to maintain a contingency fund (described below) which can be used to pay for changes in the project.

- **Permitting:** Your project may require obtaining various land use approvals. Generally, the costs of obtaining these approvals and hiring the appropriate professionals is the responsibility of the homeowner.

- **Legal Fees:** You may want to consider retaining an attorney to assist you in negotiating the construction contract with the contractor.

CONTINGENCY FUNDS

Once you establish a budget, consider keeping some additional funds in reserve for changes in the project and/or finishes you may want to add as you see the project progress. Almost all projects involve changes which impact the budget. Consider a contingency fund of 10% to 20% of the construction budget. You should expect to spend some or all of these funds. It is best to consider the contingency funds as part of the cost of the project, not something additional.

LAND USE APPROVALS

If your project involves expanding the house, you may require local land use approvals. Obtaining land use approvals can take time and land use approvals must be obtained before a building permit can be issued.

Tip: *It is a good idea to obtain a copy of the local zoning ordinance and review it to see if your building is allowed and, if so, under what conditions.*

- **Obtain a Plot Plan:** You will require a plot plan to determine which, if any, land use approvals you will need. A plot plan is a diagram of your property showing the legal boundaries of your property, the location of your house and the location of any easements or right of ways on your property. For a cost of $200 to $300, a surveyor can draw your plot plan.

  Tip: *It is likely a plot plan was prepared when you first purchased or refinanced your home. Therefore, check your property records to see if a plot plan has been prepared.*

- **Wetlands:** Any addition to or expansion of your home (including adding a deck) will require the local Conservation Commission to determine if your project is located within 100 feet of a designated wetland. If your building is outside the 100-foot buffer, then the Conservation Commission will inform the Building Inspector that there are no wetland issues impacting the project. If, however, the Conservation Commission determines that you are within 100 feet of a wetland, you must file a document known as a "Notice of Intent" with the Conservation Commission. The Notice of Intent is usually prepared by an engineer. The engineer will describe your project and attempt to prove to the Conservation Commission that the project will not harm the nearby wetlands. Under most circumstances, the Conservation Commission will approve the project and issue an "Order of Conditions" which describes the conditions of its approval.

- **Septic System:** If your property has a private septic system and you are planning to add a bedroom, bathroom or kitchen to your home, you must prove to the local Board of Health that your septic system can handle potential increased sewage flow. You may have to hire a civil engineer and/or a septic system inspector to determine the "design capacity" of your system. If your existing system is determined to be insufficient to handle the potential increased sewage, then you will be required to either design and construct a new system to meet the increased need or expand your existing system. This can be a costly and time consuming process.

- **Variance:** Each zoning district mandates yard area requirements. Yard area requirements include: 1) setback requirements; 2) building height limitations; and 3) lot coverage limitations. To determine if you require a variance, get a copy of the town/city zoning laws and review the year area and use requirements for your zoning district. If your building addition or expansion project

violates any of the yard area requirements you will be required to obtain a variance from the local Zoning Board or Board of Appeals.

SITE INVESTIGATION

A very important step in the pre-construction planning process is the site investigation. Any expansion or addition to your home will likely require a foundation system. Because the foundation system will be constructed below the ground, it is important to evaluate the sub-surface conditions with your architect or contractor before you start your project. It is not uncommon to encounter either unsuitable sub-surface conditions, which may prohibit the building of your planned project, or poor sub-surface conditions, which may prohibit the building of your planned project, or poor sub-surface conditions, which may be very costly to correct. Subsurface conditions are evaluated by taking soil samples and having them analyzed by a qualified engineer. The four key elements you want to evaluate are: 1) soil conditions; 2) depth to water table; 3) drainage considerations; and 4) location of underground pipes, tanks and electric lines, as discussed below.

- **Soil Conditions**: Foundations must be constructed on suitable "load-bearing material". Load-bearing material can generally be found beneath the top and sub-soil. However, the depth of such material can vary greatly. You should also determine if you will have to excavate any ledge or large boulders. Removal of ledge is expensive and can be prohibitive to the project budget.
- **Depth to Water Table**: Everywhere on earth there is underground water known as groundwater. The level of groundwater can vary from 6 inches underground to more than 100 feet underground. The point at which you hit sub-surface water is known as the water table. The water table line can move up or down during the year and is generally highest in the spring. You should determine if your foundation system will be above or below the groundwater line. If the groundwater level is high you may have to construct a sub-surface drainage and sump pump system to handle the high water table as well as install extra waterproofing material along the foundation wall. Your architect or engineer can advise you on how to deal with the situation and how to design a foundation system to minimize its impact.

  Tip: *Since groundwater is always highest in the spring if construction is undertaken during the summer or fall, you may not encounter groundwater. Therefore, your contractor or architect should verify that the spring water table will not negatively impact the new foundation.*

- **Drainage Considerations:** A frequently overlooked consideration is site drainage. Your home addition will likely change the way surface water drains around your existing home. You want to be sure that by expanding your home you are not causing a drainage problem to the existing foundation or on a neighbor's property. Your architect or contractor should be able to properly design a drainage system.

- **Underground Improvements:** It is important that you locate all underground structures on your property to determine if any such structures will interfere with your construction project. The most common structures are sewer and water lines, electric, cable and telephone lines, underground oil tanks and sprinkler lines.

HAZARDOUS MATERIALS

There are three hazardous materials encountered in many home improvement projects – lead paint, asbestos and radon. Generally, contractors exclude the cost of removal or encapsulation of hazardous materials from their contracts. Therefore, the home should be tested for these substances prior to beginning construction and if any of them exist you should add the cost of removal or encapsulation to your budget.

- **Lead Paint:** Any home constructed before 1978 may contain lead based paint. Lead paint is especially dangerous to children under 6 years of age. Houses undergoing remodeling will inevitably involve sanding and scraping of surfaces (walls, doors and windows) which may contain lead paint, thereby releasing lead paint particles into the air and creating a hazardous condition. To avoid this dangerous situation, the lead paint should be removed or encapsulated according to state and federal laws. In Massachusetts, companies inspecting or removing lead paint must be licensed by the state. For additional information, visit http://www.mass.gov/eohhs/gov/departments/dph/programs/environmental-health/exposure-topics/lead/

- **Asbestos**: Asbestos building materials were widely used in homes up until the 1970s. In many homes, asbestos can be found in shingles, siding and vinyl floor tiles and in insulation for pipes, ducts and furnaces. Building materials that ordinarily post no hazard (such as shingles and floor tiles) become hazardous when asbestos fibers are released by sawing, sanding, drilling or grinding. Inspection and removal of asbestos is regulated by the Environmental Protection Agency (EPA). For further information, visit http://www.mass.gov/eea/agencies/massdep/.

- **Radon:** Radon is a potentially carcinogenic gas that can seep into homes through cracks in the foundation and cause health problems. Radon generally comes from certain types of ledge and New England is considered a high risk area. Radon levels are almost always highest in the basement, dropping off considerably on upper floors. Radon levels are determined by use of a test kit.

  If your project includes a new addition you may want to consider testing your existing home. If you find radon levels are high, there is a good chance that an addition to the home will also have high levels. In this case, you may want to have the contractor install a ventilation system in the basement of the existing home and in the addition. The EPA estimates that a typical radon problem can be corrected for $1,000 - $2,000. To the degree you can incorporate the work into your construction contract, it may be less expensive. For more information on radon, contact the EPA at 800-55-RADON.

  You can do your own radon test by ordering a test kit. Test kits cost between $30 to $60 and are either short-term (2-7 days) or long-term (90 days). The longer term kits provide the most reliable results. Below is a list of test kits:

Short Term Kits	Long Term Kits
Air Check (4-7 days)	Key-Trac (90 days)
Key-Rad Kit (2-4 days)	RadTrak (90 days)

DEVELOP A PROJECT SCHEDULE

If you do not have experience in construction, seek the assistance of people with experience to help you develop a realistic project schedule. As a general rule, people unfamiliar with construction underestimate the time it takes to complete a project. You can contact contractors, architects, building inspectors and neighbors or friends who have completed a similar project and ask for their opinion as to the time it takes to complete a project like yours.

Tip: *A rough rule of thumb is that most residential construction jobs take a week for each $4,000 - $6,000 of work.*

When developing a project schedule the key phrase to keep in mind is "EXPECT THE UNEXPECTED". Construction is an imperfect science. There are many reasons projects can be delayed, some of which are listed below. You can count on encountering some delays and your schedule should be flexible enough to accommodate one or more of the items listed below occurring:

- Poor weather conditions during construction
- Possible design changes after construction has started
- Shortage of certain building materials or supplies
- Sub-contractors failing to perform assigned tasks on time
- Special orders and/or custom components requiring long lead times

COST VERSUS BENEFIT OF THE PROJECT

Another consideration is the cost of the project versus the benefit of the increased property value resulting from the project. You may want to avoid making improvements to your home which will add less value to your home than the cost of the improvements. The importance of recouping an investment in a renovation, however, is for each homeowner to assess based on his or her own circumstances. Homeowners who intend to remain in their homes for a long period of time and who greatly desire an enhancement to their homes may not care if the values of their homes does not increase by at least the costs of the enhancement.

Tip: *In general, the greater the variety of homes in your neighborhood and the wider the range of prices for recently sold homes, the more likely the improvements to your home will increase your home's resale value.*

To conduct a cost/benefit analysis, determine the value of your house "as is", and then determine the value of your house with the addition or renovations. Either hire an appraiser to do a before and after appraisal or your home, or alternatively, perform your own appraisal. Our Staff can provide you with comparable home sales in your neighborhood to get you started. However, if you intend to finance the project with a mortgage, the bank will require an appraisal of your home to determine the value of the home after the renovations/additions.

Tip: *Remodeling Magazine's website contains an annual "Cost vs. Value Report". This report contains the average cost versus resale value of various home improvement projects. This report contains the average cost versus resale value of various home improvement projects. Copies of the report are available from the publisher's website, www.remodeling.hw.net*

FINANCING CONSIDERATIONS

Depending upon the cost and complexity of your home improvement project, there are three basic ways to finance the project: a home equity line of credit; refinancing your existing mortgage; or a construction loan. Each of these alternatives and their suitability to your project are briefly described below:

- **Equity Line of Credit:** For small projects costing less than $40,000, an equity line of credit is typically an inexpensive and quick way to finance the project. Generally, there are not any closing costs associated with these types of loans. The drawback of the home equity line is that the interest rate is generally adjustable and can increase over time.
- **Refinance the Existing Mortgage:** A second alternative is to refinance your home using the equity in your home as the source of financing for your home improvement project. For example, if your home improvement project is estimated to cost $50,000 and your outstanding mortgage balance is $100,000, you could refinance your existing mortgage with a new $150,000 mortgage *as long as* the value of the home will support that loan amount.
- **Construction Loan:** For large renovation projects and/or building additions, lenders will usually suggest construction loans. Under a construction loan, funds needed for construction would be disbursed to the contractor on a monthly basis during the construction phase of the project with approval of the owner and/or architect. During the construction process, interest on the construction loan accrues and is added to the mortgage balance until the project is completed. At the time of completion, the construction loan will convert to a permanent loan with the terms you select (i.e., 15-year, 30-year, fixed/adjustable rate). The advantage of a construction loan is that you do not begin repaying the money used for construction until the contractor Is paid.

  Tip: *If you decide to obtain a construction loan, be sure to select a bank or mortgage company which is experienced in this type of lending. An inexperienced lender could cause construction delays and/or funding problems.*

HELPSHEET 2-1

THE PRE-CONSTRUCTION CHECKLIST

Building or Remodeling Program

[ ] Review remodeling magazines for ideas
[ ] Contact architects or draftsman
[ ] Visit homes with similar completed projects
[ ] Meet with the local building inspector

Establish a Budget

[ ] Talk with contractors
[ ] Review cost guide surveys
[ ] Consider hazardous materials
[ ] Consider design fees
[ ] Consider permitting costs
[ ] Legal fees
[ ] Contingency Fund
[ ] Septic system expansion
[ ] Subsurface conditions

Land Use Approvals

[ ] Wetlands/Conservation Commission
[ ] Septic system expansion/upgrading
[ ] Zoning/Variance

Site Investigations

[ ] Soil conditions/ledge
[ ] Water table
[ ] Drainage considerations
[ ] Locate underground structures (sewer, water, electric, phone, cable lines)

Establish Project Schedule

[ ] Contractor's suggestions
[ ] Experience of friends/neighbors
[ ] Architect's Suggestions
[ ] Weather considerations

Cost/Benefit Analysis

[ ] Before and after home value
[ ] Alternatives to construction

Financing Considerations

[ ] Home equity loan
[ ] Refinance existing mortgage
[ ] Construction loan

Hazardous Material Testing

[ ] Lead paint
[ ] Radon
[ ] Asbestos

HELPSHEET 2-2

COMMUNITY EVALUATION FORM

I. BUILDING PLANS

A. Do building plans need to be prepared by a registered architect or engineer? ___ Yes ___ No

B. How many sets of plans are required to be submitted and to whom? _____

C. What specific building plans are required for my project?

	Yes	No
Foundation Plan	___	___
Floor Plans	___	___
Building Sections	___	___
Construction Details	___	___
Interior Elevations	___	___
Exterior Elevations	___	___
Wall Framing Plan	___	___
Floor Framing Plan	___	___
Roof Framing Plan	___	___
Landscape Plan	___	___
Utility Plan	___	___
Plot Plan	___	___
Door & Window Schedules	___	___
Electrical Plan	___	___
Plumbing Plan	___	___
Heat & Air Conditioning Plan	___	___

II. PLOT PLAN

A. Is a certified plot plan required? ___ Yes ___ No

B. Does the plot plan need to be prepared by a licensed surveyor? ___ Yes ___ No

III. SEPTIC SYSTEM (if applicable)

A. Is a septic system evaluation required? ___ Yes ___ No

B. Will I be required to upgrade or replace the septic system? ___ Yes ___ No

C. What time of year are percolation and deep hole testing allowed? _____

IV. FOUNDATIONS

A. Can a foundation be put in any time of year, weather permitting? ___ Yes ___ No

B. Is a full foundation with footing required? ___ Yes ___ No

V. INSPECTIONS

A. Which types of inspections are required?

- Electrical? ___ Yes ___ No
- Plumbing? ___ Yes ___ No

B. How many periodic inspections will you make on my project? _____

C. How much lead time is required to arrange an inspection? _____

VI. LAND USE APPROVALS

For my project, what local land use approvals or board reviews will I require?	Yes	No
• Zoning variance	___	___
• Special permit	___	___
• Wetlands/Conservation Commission review	___	___
• Board of Health/Septic System review and approval	___	___
• Town engineer review and approval	___	___
• Review and approval by the Planning Board	___	___

VII. BUILDING PERMIT

A. What is the cost of a building permit? _____

B. How long does it take to obtain an approved building permit from the date submitted? _____

C. Are there any other requirements for obtaining a building permit? _____

3. BUILDING PLANS AND SPECIFICATIONS

- Building Plans
- Specifications
- Product Samples
- What Needs to be Specified
- *Helpsheet 3-1 ~ Plans and Specifications Checklist*

3 BUILDING PLANS AND SPECIFICATIONS

For most home renovation and/or addition projects, your architect, draftsman or contractor will prepare a set of plans and specifications which describe in words (specifications) and pictures (plans) what your project involves. Together, the plans and specifications are referred to as the *Contract Documents*. The Contract Documents represent a legally-binding description of your project and provide the homeowner with protection in the event that the project is not constructed according to the Contract Documents which you have approved.

Some homeowners make the mistake of hiring a contractor to do a project without any plans and specifications, basing their decision solely on price. For small repairs this may be adequate. *However, for large remodeling or home improvement projects a contractor's price without the property plans and specifications means very little.* For example, a contractor may say he will remodel your kitchen for $15,000. Without plans and specifications, the contractor can provide you with whatever materials (kitchen cabinets, flooring, fixtures, appliances, lighting and windows) he chooses as long as the project stays within the $15,000 budget. It is difficult for the homeowner to determine if the workmanship and materials chosen by the contractor are acceptable and will stand the test of time. Another problem with this type of arrangement is that the scope of the contractor's work is not clearly defined. For example, does the price include all related electrical, plumbing and heating work? It is our opinion that major home improvement projects undertaken without the proper Contract Documents are an invitation for trouble.

BUILDING PLANS

Building plans provide a visual layout of your project showing size, location and spatial relationships. Building plans are generally prepared by architects and/or draftsmen. However, some larger design-build contractors have the ability to develop plans and/or have relationships with architects or draftsmen to develop the plans on their behalf. The building plans may include a floor plan, building section, elevations and construction details and schedules (e.g., door, window, hardware and finish schedules). The number and type of plans will be determined by the complexity of the project, as well as the requirements of the local building inspector. Generally speaking, the more structural changes to the home the more plans will be required. Furthermore, if there are to be changes and/or additions to the plumbing, electrical or heating systems, separate plans showing these components must be developed.

Set forth below is a list of the types of plans that may be required for your home improvement project. Helpsheet 3-1 contains a detailed checklist of the plans you may require for your project.

- **Site Plan:** A site plan or existing conditions plan shows the location of all property lines, lot dimensions and lot grades and the location of the house, driveway, septic, underground utilities and easements. In addition, the site plan will show the location of any new additions and any new drainage systems or underground structures which are part of the project.

- **Landscape Plan:** A landscape plan contains all landscape features which would be added as part of your project. Typical items include driveways, walkways, site lighting, plant materials, new areas for see and sod, sprinkler systems, fences and flower beds.

- **Foundation Plan:** A foundation plan shows the layout and design of the foundation system for any addition. The foundation plan is generally used by the building inspector to determine if the foundation system is structurally acceptable. It will also show any subsurface drainage system required as well as any necessary waterproofing.

- **Floor Plan:** Floor plans show the layout of the home or addition. All rooms, walls, doors, windows, cabinets, stairways, baths or kitchen fixtures are identified, dimensioned and labeled.

- **Elevations:** Elevations are plans of the home or addition (from both the inside and outside) for each of the four sides. The elevations will identify the location of all windows, doors, decks and porches, roofing materials and exterior siding treatment. The elevations give you a good idea of what the addition will look like and how well it matches the existing home.

- **Building Sections:** A building section is a cross section of the home from the foundation to the roof, which illustrates and describes how the foundations, floors, walls, ceiling and roof will fit together.

- **Framing Plans:** Framing plans detail how the addition will be framed and identify the structural support system for the floors, walls, ceilings and roof.

- **Door and Window Schedule:** Although the door and window schedule are referred to as plans, they are really schedules which identify the type, size and performance standard of each window or door shown on the plans.

- **Electrical Plan:** The electrical plan will identify and show the location of all wiring, outlets, switches and light fixtures.

- **Mechanical and Plumbing Plan:** This plan will identify any new mechanical systems such as ductwork, boilers, baseboard heat fixtures and air conditioning equipment. The plan will also show the location of any new water or heating lines.

SPECIFICATIONS

The second component of the Contract Documents is the project specifications. The specifications are contained in a written document which describes the materials to be used, the materials' performance or quality standards, and how materials are to be installed or applied.

Specifications describe not only the materials to be used but also acceptable manufacturers, preparation procedures, workmanship and installation procedures. The more detailed specifications are, the more protection you will have against the contractor as it relates to quality of materials, workmanship and selection of materials.

Tip: *Generally speaking, if the contractor prepares the plans and specifications, you can expect them to be more general in nature, which gives the contractor leeway in selecting materials and determining the quality of workmanship. An architect who is specifically paid to prepare plans and specifications will prepare much more detailed documents protecting you during the construction process.*

For example, the plans may indicate that all walls are to be painted. A specification would answer the following questions related to painting that wall:

- What kind of paint should be used?
- What manufacturers are acceptable?
- How many coats are required?
- What surface preparations are required?
- How will color selection be handled?

PRODUCT SAMPLES

The specifications should require that the contractor submit product samples to you and/or your architect for review and approval before installation. Contractors will try to submit products they can get at the lowest cost. You/your architect will evaluate the submitted sample to determine if the product meets the requirements of the project specifications. If it does not, your contract should give you the right to reject the product and require the contractor to submit another product.

WHAT NEEDS TO BE SPECIFIED

In general, everything shown on the plans should be specified. Helpsheet 3-1 contains a checklist of items which may be included in a home renovation project. Some of the items listed here may not apply to a particular project and some items are not included because each project has different requirements.

WORKSHEET 3-1

PLANS AND SPECIFICATIONS CHECKLIST

I. Typical Items Requiring Specifications

Sitework
[ ] Demolition
[ ] Subsurface Investigations
[ ] Site Preparation
[ ] Earthwork
[ ] Paving
[ ] Site Improvements
[ ] Lawns and Plantings

Concrete
[ ] Cast in place concrete

Masonry
[ ] Unit masonry
[ ] Reinforced Masonry

Wood
[ ] Rough Carpentry
[ ] Finish carpentry and millwork

Thermal & Moisture Protection
[ ] Waterproofing and caulking
[ ] Building insulation
[ ] Asphalt roof shingles
[ ] Flashing
[ ] Skylights

Windows & Doors
[ ] Wood doors
[ ] Wood/vinyl windows
[ ] Glass and glazing
[ ] Finish hardware

Specialties
[ ] Kitchen cabinets/bathroom specialties

Finishes
[ ] Counter tops
[ ] Gypsum drywall
[ ] Ceramic tile
[ ] Carpeting
[ ] Painting
[ ] Resilient flooring
[ ] Light fixtures

Equipment
[ ] Wood stove
[ ] Kitchen appliances
[ ] Bathroom fixtures
[ ] Light fixtures

Mechanical
[ ] Air conditioning equipment
[ ] Plumbing
[ ] Heating & Ventilation (boiler, piping, thermostats, vents)

Electrical
[ ] Electrical systems (wiring, outlets, switches, security system, phone outlet, cable lines)

II. Typical Building Plans

[ ] Site Plan
[ ] Landscape plan
[ ] Foundation plan
[ ] Floor plan
[ ] Elevations
[ ] Building sections
[ ] Framing plans
[ ] Door & window schedule
[ ] Electrical Plans
[ ] Mechanical and plumbing plans

4. CONSTRUCTION TEAM OPTIONS

- Owner/Architect/Contractor
- Owner/Design-Build Contractor
- Owner/Draftsman/Contractor
- Owner/Home Center/Contractor
- Owner as Contractor

4 CONSTRUCTION TEAM OPTIONS

As the homeowner, one of the most important roles you will play is in the selection of your construction team. Once the project is underway, it is difficult and costly to replace a team members. Therefore, it is important to take the time to properly identify, interview and select reputable and competent professionals. There are five basic team options available to you, namely: 1) owner/architect/contractor; 2) owner/design-build contractor; 3) owner/draftsman/contractor; 4) owner/home center/contractor; and 5) owner as contractor. Below we discuss the advantages and disadvantages of each team.

OWNER/ARCHITECT/CONTRACTOR

The owner/architect/contractor relationship is the most common type of construction team for large additions and renovation projects. This team is almost always used in commercial and institutional projects. For residential projects, some people decide that the added expense of an architect is not justified. Be sure that you fully understand the role of the architect, however, before making this decision. Generally speaking, the more complicated the project, the larger the project budget and the longer the construction period, the greater the need of the services of an architect.

- **Advantages**
  - The architect can formulate your remodeling ideas into a workable plan and provide you with options.
  - The architect works for you
  - The architect will develop detailed plans and specifications
  - The architect will bid the job out to various contractors to assist in getting the best price
  - The architect will supply and assist you in drafting a contract between you and the contractor
  - The architect will assist you in the review and acceptance of product samples
  - The architect will assist you in obtaining all necessary land use approvals and conducting site investigations
  - The architect will review the contractor's request for payments and change orders
  - The architect will make periodic observations of the construction progress

- **Disadvantages**
  - The architect will charge a fee of 10% to 15% of the estimated construction cost
  - An architect may not be willing to take on a small project
  - The architect may impose his or her own ideas into the design which may be at odds with your ideas

OWNER/DESIGN-BUILD CONTRACTOR

A second common team for home renovation and expansion projects is the owner/design-build contractor relationship. In this situation, the contractor will hire his or her own architect or draftsman to develop a set of plans and specification for you. Once the Contract Documents are completed and you accept them, the design-build contractor will give you a price for the project. In the event you elect not to hire the design-build contractor, he or she will charge you a fee for the design services. If you do accept the contractor's bid, the contractor will usually credit the cost of the plans and specifications to the construction cost.

- **Advantages**
  - The cost for plans and specifications will be lower than what an architect would charge (usually 3% to 6% of construction cost) because the contractor will make his or her profit during the construction phase.
  - The contractor may be very experienced in the type of project you are considering, making the need for an architect unnecessary.
  - Because the contractor and architect (or draftsman) are on the "same team", it is unlikely that any disputes will arise between them. This may ensure a smoother running project with few delays.

- **Disadvantages**
  - Generally, you will not have the opportunity to bid the job out to different contractors if the contractor is preparing the plans himself.
  - The contractor will use his or her own standard contract which generally favors his or her position.
  - Because the contractor and architect are working together, you will not have a construction/design expert on your side who can evaluate the plans and specifications, monitor construction progress and help you choose a contractor who will give you the best price.
  - You must rely on the contractor and local building inspectors for assurance that the reno/addition was constructed using acceptable workmanship and in conformance to all building codes.

Tip: *If you decide to go with a design-build contractor, consider hiring an independent architect to review the plans and specifications prepared by the contractor to get an expert opinion as to their completeness and the quality of materials being used.*

OWNER/DRAFTSMAN/CONTRACTOR

For smaller additions and/or less complicated renovation projects the owner/draftsman/contractor may be the most cost-effective team. Draftsmen, who are also known as architectural designers or associates, are not licensed architects, but have experience in the development of plans and specifications. Many times draftsmen work for architectural or engineering firms and moonlight doing small residential design projects.

- **Advantages**
  - A draftsman will prepare plans and specifications for a price of 50% to 70% less than a registered architect. Most are paid hourly.
  - You can use the plans and specifications developed by the draftsman to bid out the project to various qualified contractors.

- **Disadvantages**
  - A draftsman is generally not qualified and/or available to assist you in many phases of the project as an architect would be, including: 1) obtaining land use approvals; 2) supervising any pre-construction site investigations; 3) selecting a contractor; and 4) providing construction administration services.
  - Draftsmen are generally not as experienced as architects. Therefore, their design and renovation and plans may not be as cost effective or aesthetically pleasing.

OWNER/HOME CENTER/CONTRACTOR

Many of the larger regional home improvement centers such as Home Depot and HQ offer free kitchen and bath designs. If your project is primarily a renovation of a kitchen and/or bathroom, you need only to take measurements of the existing rooms (locating all windows and doors) and bring them to your local home center, which will help you design a new kitchen or bath using computer-aided design. The home center will also price the costs of all materials such as all cabinets, sinks, appliances and fixtures. With your design and materials list you need only to hire a qualified contractor to demolish the old kitchen or bath and install the new kitchen and bath fixtures you have selected and purchased.

- **Advantages**
  - No design fees are paid
  - You purchase many of the materials yourself directly from the home center, avoiding the 10% to 20% contractor materials mark-up.
  - In some cases, the home center can provide and/or recommend a contractor they have worked with.

- **Disadvantages**
  - The home center's design service are limited. If your project involves structural work, a new addition or a complicated kitchen or bath project, you will need an architect or draftsman.
  - You are responsible for taking accurate measurements. An error can be costly.

OWNER AS CONTRACTOR

A final team option is the owner as contractor. In this case, you would hire an architect or draftsman to prepare plans and specifications, then act as your own general contractor, bidding out all work required for the project to sub-contractors such as carpenters, plumbers, electricians and masons. Many states allow you to act as your own general contractor for property you own, even if you are not a licensed contractor. *Check with your local building inspector before considering this option.*

- **Advantages**
  - You can save 20% to 40% of the construction price by acting as your own general contractor and buying many of the materials.
  - You can bid out and select all subcontractors such as plumbers, carpenters, electricians, roofers, masons and painters.

- **Disadvantages**
  - You are responsible for obtaining all land use and building permits.
  - You may be liable for injury of any worker on the job.
  - You must spend a great deal of time on site inspecting work, coordinating subcontractors, ordering materials and maintaining a project schedule.
  - You must ensure that all subcontractors' work is in conformance with local and state building codes.

This option is not recommended for most people. To successfully complete a project, you must devote a great deal of time and effort to the project and must be knowledgeable of the construction progress.