Successful Home Contracting



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Lesson Four

Planning . . .

Putting Your Plans And Specifications Together



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Where You Are In The Course

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PHYSICAL -	PLANS AND SPECIFICATIONS
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	CONSTRUCTION (QUALITY CONTROL)

SUCCESSFUL HOME CONTRACTING

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Now that your lot has been selected and purchased, it's time to start the actual planning process. As you can see in the course outline, the planning of your home will break down into a *physical* component

and a *financial* component. In the next six lessons, we'll examine the physical portion of planning.

During the *physical planning* of your home we will be looking at two areas:

- 1. The *Plans and Specifications* will determine what is in the home and what it will look like.
- 2. The *Project Scheduling* will look at the construction process what happens when and how it all goes together.

In this lesson we will first examine the elements that will be included in the Plans and Specifications themselves, and point out some of the things you'll need to keep in mind as your plans are being assembled. Later we'll tell you about how to go about having your Plans and Specifications prepared, how much they should cost, etc. The material presented here is not intended to teach you how to design a home or construct a set of "working drawings", but rather to make you familiar with these elements so that you can deal effectively with your architect or designer.

The next lesson will be the first of four lessons which deal with the *planning decisions* you will make in actually developing your Plans and Specifications.

WHAT YOU WILL LEARN IN THIS LESSON

- What the *Plans* and *Specifications* actually are.
- What will be included in the Plans and Specifications.
- How to go about getting your Plans drawn up.

PLANS AND SPECIFICATIONS

In order to build a home you must have a set of *Plans and Specifications.* These will be used by the suppliers and subcontractors to tell what the home will look like, what's in it, how big it is, and how it goes together, and by the banker to determine how much money to lend you to build the home.

DEFINITIONS

We probably need to distinguish here between *plans* and *planning*. The *plans* are actually a set of *scaled drawings* of various aspects of the home (the floor plan, construction details, etc.). *Planning*, on the other hand, is the *process* of making decisions about the design and construction of the home - not only what it's going to look like and what is going to be in it, but also who is going to do the actual construction, how it will be financed, and so forth.

The *specifications* are a written description of everything that is not convenient or necessary to show graphically in the plans - like the make and model number of the kitchen range.

We have included a sample set of *Plans* and *Specifications* in the Appendix to this lesson.

THE PLANS

Most of this lesson will be devoted to the plans (drawings) which will be used to construct your home. Here are the major elements the plans will include:

- The Foundation Plan
- The Floor Plan
- The Elevations
- The Site Plan
- Other Construction Details

What follows is a detailed description of each of these elements of the drawings. As you read this lesson, try to understand why each element is included in the plans. What is it's purpose? Looking at the sample plans at the end of the lesson will help you understand what you are reading.

THE FOUNDATION PLAN

The foundation plan shows the shape and dimensions of the foundation for your home. It is used in laying out and constructing the footings and foundations. It will show the outside foundation walls as well as the location of any piers and interior columns. If a slab floor is to be poured, the foundation plan will often indicate the location of plumbing fixtures so that the plumber can get the pipes in the right place.

THE FLOOR PLAN

The *Floor Plan* shows what rooms (spaces) are present, their size, and their relationship (which room is next to which). This is where you will decide how many bedrooms. How big are they? How many baths? Are the bedrooms grouped together on the second floor, or is the master bedroom separated from the rest?

A lot of what follows is self evident. It is presented to help you avoid the unpleasantness of finding out too late that you have



This couple is working with their plans - making planning decisions!

forgotten to address something. First we'll discuss the actual spaces (they are called "spaces" rather than "rooms" because some of them - like *patio* and *hall* - are not rooms at all, although we live in and move through them). Then we'll look at other design *attributes* which may be reflected in the *Floor Plan* or perhaps in the *Elevations*.

SPACES

Here is a list of spaces found in homes. They are presented without comment unless some is needed. Select those you want to include in your home as a starting point for the design process.

Foyer	
Living Room	
Family Room	
Den	same as a family room
Great Room	usually means one living space (family room) instead of two (living room and den)
Library	
Music Room	
Dining Room	
Kitchen	Here is where you can let your imagination run wild. Do you want a big country kitchen, a galley kitchen, or what. You can find some good "idea" books on kitchen design.
Breakfast Room	
Nook	like a small breakfast room or area, usually off the kitchen
Laundry Room	You'll need 5 feet to put a washer and dryer unless they are the "stacked" units
Powder Room (Hal	f Bath)
Sewing Room	
Shop	
Study	
Master Bedroom	
Master Bath	This is now one of the most important rooms in the home. It is now seen as an adult retreat, often with space for dressing, lots of mirrors, whirlpool bath, sauna, and so forth.
Bedrooms	
Baths	
Coat Closet	
Linen Closet	
Pantry	
Broom Closet	
Sun Room	
Atrium	
Exercise Room	Malas and also also a fato and Min
GUSEL	imum closet depth is two feet. For a walk-in closet, figure two feet for each set of hanging clothes and two feet for walking space. So if you have clothes on both sides of a walk-in, it'll need to be at least six feet wide.



Deck Court

<u>SIZE</u>

One way to get a feel about room sizes is to simply look at the rooms you now occupy. Are they adequate? Measure them. Do they seem small? Find a room that feels better. Measure it. Unless you have a lot of experience reading floor plans, you probably won't be able to relate to the sizes as they are shown. It is much better to find some real live rooms that seem comfortable. When looking at rooms in other peoples' homes, remember to take into consideration the difference in your furniture. Yours may be more or less bulky than your friends'.

RELATIONSHIP

How the spaces are arranged. Which rooms go where. Which spaces are next to or isolated from each other . . . this is really the essence of the plan.

OTHER ELEMENTS SHOWN IN THE FLOOR PLAN

Not only must you decide which spaces are to be included in your home, and how big they are to be, and how they will relate to one another, but

you will also be able to have control over other *attributes* of the design.

CEILING HEIGHT

Eight feet is common. Nine and sometimes ten are used in larger, more expensive homes. Seven and one half is sometimes recommended for energy conservation. The building codes address the subject of ceiling height. If you have any ceilings less than 7'-6", or have any *sloped* ceilings, check with the building official to make sure they don't violate your local code. The sample plans in the Appendix have a 10' ceiling through the central (Great Room - Kitchen) part of the home.



Vaulted Ceiling

FLOOR HEIGHT VARIATIONS

Floor elevations may be raised or lowered for effect. A <u>raised foyer</u> gives the effect of stepping down into the home. A sunken living room gives the effect of intimacy. These are just a couple of examples of the many possibilities available here.

VAULTED AND TREYED CEILINGS

The vault can rise to a ridge in the center or just slope from one side of the room to the other. Obviously the vaulted ceiling can only be used when there are no rooms above. Treys are decorative, geometric mini-vaults.

FIREPLACE(S)

The location of the fireplace is an important plan consideration. If there are fireplaces on different floors, try to have them located above one another so you will only need one chimney for both.

DOORS

At the "plan" stage you'll primarily be concerned with location and size. Doors are 6'-8" tall. Typical widths for doors are:

Front Door	.3'-0"
Other Outside Doors	. 2'-8"
Sliding Glass Doors	. 5', 6', or 8'
Bedroom Doors	. 2'-6"
Bathroom Doors	. 2'-0" or 2'-4"
Closet Doors	2'-0" or 2'-4" regular doors. Many people use
	bifold doors for closets. The width depends on
	the width of the closet. Normally bifolds come
	in 3', 4', 5', and 6' widths.
Linen Closets	Depends on the size of the closet. Sometimes
	it will take a 1'-6" door.
Door Openings	Some doors are not doors at all but merely
	doorways openings say between the liv-
	ing room and the dining room. Look at your
	present home or those of friends for a feel as
	to how wide these should be.
Garage doors	Singles are 8 feet or 9 feet. Doubles are 16 feet
	to 18 feet.

WINDOWS

Windows come in a wide variety of dimensions. You'll use them to provide light, view, egress (getting out in an emergency), and maybe ventilation! Again look at examples of homes you visit to find the kind of effect you want to recreate. The building codes will require a window in each bedroom and will specify the minimum size. Just make sure your plan meets the minimum.

One type of window - the *clerestory* window - can affect your roof type and framing requirements. The clerestory is an effective way to get more light to the interior of the home. The roof portion containing the clerestory windows usually is "stick built" (with individual pieces of wood, cut to form rafters, ridges, etc.), instead of being constructed with roof trusses.



WINDOWS AND ENERGY

The amount of window surface area you design into your home will affect its energy efficiency. Even the best window (triple glazed, thermal breaks, etc.) are much less efficient than a well insulated wall. So it's a trade off. You'll have to balance your need for light against your need to conserve energy. Some studies on highly energy efficient homes suggest that the total window area be held to under 10% of the outside wall surface. Window placement is also an energy consideration. South facing windows, properly shaded from the summer sun, can let in the winter's warming rays.

In *Lesson Seven* we'll consider doors and windows in more detail - specifying type, material, style, and so forth.

ELECTRICALS

Normally the location of the light fixtures, switches, and outlets are shown on the Floor Plan. You will be able to tell which switches control which fixtures. Controlling a fixture or outlet from two locations requires a three-way switch - designated S_3 on the plan.

You can also show the location of telephone outlets, cable TV, intercoms, and so forth on the Floor Plan.

PLUMBING

The location of all plumbing fixtures are shown on your Floor Plan. These include the kitchen sink, washing machine supply, bathroom vanities, tubs, toilets, showers, water heater, and outside hose connections.

CABINETS

The location and basic design of the cabinets is shown in the Floor Plan.

APPLIANCES

Built-in and major freestanding appliances are shown, including the refrigerator, oven, range, and dishwasher.

HVAC

The only heating, ventilation, air-conditioning (HVAC) elements usually shown on the Floor Plan are the location of the furnace or air handler, and the location of the

thermostat.

ATTIC ACCESS

You may want a set of stairs going to the attic. If not, your choices are a disappearing stairway or a "scuttle hole" (one of those little trap doors you have seen in closet and hall ceilings).

Disappearing stairs can



go anywhere, but it helps if they run parallel to the ceiling joists or roof trusses. That way the stairway will fit between the structural elements without a lot of extra work. From an energy standpoint, it helps if you put them in an uninsulated part of your home, like the garage. When a disappearing stairway is closed, there is no insulation there to prevent loss of your conditioned air. Generally, they measure about 2' x 5'. Make sure you have room to get the stairway down. Also, check to see that you'll have some head room when you crawl up to the attic space.

If you use a scuttle hole, make sure the covering is insulated. The sketch above shows an energy efficient design for a scuttle hole.

Click here for some other symbols you may find on the floor plans.

THE ELEVATIONS DEFINITION

The Elevations of your home are the drawings which show how it will look from the outside. Typically, there are four views . . . the front, rear, left, and right sides. The predominant features of the Elevations are overall shape (one or two story, split level, etc.); roof style, pitch, and color; type of siding or veneer; window and door location, size, and style; porches; and trim details.

STYLES

There are many styles for you to choose from. Pick one that is appropriate for the lot, the neighborhood, and the price range . . . as well as your own tastes. Some of the many styles you



may wish to consider are: Williamsburg, Colonial, Spanish, Mediterranean, Tudor, California Modern, Desert Southwest, and Cape Cod.

ROOF DESIGN

The roof design will play a large part in the overall look of the home. The simplest and easiest design is the *gable roof*. It allows for the use of common roof trusses which are inexpensive and fast (see "Roof" in the next section under *Structural Elements*). Other common types are the *bip roof*, the *flat roof*, and the *mansard roof*.

The Elevations are also used to show other construction details such as roof pitch (slope), roof overhang dimensions, type of siding and roofing materials, and so forth. (See the sample plans in the Appendix to this lesson).



Mansard Roof

Hip Roof



THE SITE PLAN

DEFINITION

The site plan shows your lot drawn to scale, how the home sits on the lot, and all of the major outdoor features like:

- Walks and Drives
- Decks and Patios
- Swimming Pool
- Fences and Retaining Walls
- Well, Septic Tank, and Drain Field Location

FHA also requires you to show elevations (feet above sea level) at each corner of the property and at finish floor level. If extensive or unusual grading will be necessary on your lot, you may wish to include the grading on your site plan. You'll probably need an architect, landscape architect, or engineer to do the grading plan.

LOT DETAILS

The length and direction of each property line is shown, along with *easements, yard lines*, and the *set back* from the front property line. The road adjacent to the lot should be shown with its name, width, and right-of way. (The right-of-way is an area on each side of the street which is actually owned by the municipality, and is used for utility lines and street maintenance.) The distance from the lot to the nearest intersection is often shown for urban lots. For rural lots, a location map may be appropriate.

PLACEMENT OF THE HOME ON THE LOT

The orientation of the home can affect its energy efficiency. In addition, you'll be restricted in your choice of positioning by front, side, and rear yard set backs required by the zoning and possibly by the restrictive covenants. The distance from the home to each property line should be shown.

If you're using a well and/or septic tank, the best location for these systems will also have to be taken into consideration when siting the home. Their location in relation to the home should also be dimensioned.

OTHER CONSTRUCTION DETAILS

STAIR DETAILS

Stair details will show a cross section of the stairs, indicating the number and width of the treads, and the number and height of the risers.

WALL SECTION

A cross section of a typical outer wall would show the size of the footing, the type and basic design of the foundation and floor systems, the wall including its inner and outer coverings, ceiling and window header height, roof and overhang design, wall and ceiling insulation.

CABINET DETAILS

These details show the elevations of the cabinets - what they look like from the front.

SECTION THROUGH THE HOME

This detail is not always included, but is useful to help understand how the home goes together, especially if there are complex spaces in the home, like vaulted ceilings, sunken living rooms, and so forth.



DOOR AND WINDOW SCHEDULE

This is a table which details door and window types and sizes. Sometimes this information is shown on the floor plan itself, rather than in a separate table. See Page 127 in the Appendix.

FINISH SCHEDULE

This table shows trim and finish details - which rooms get crown moulding, hardwood flooring, wallpaper, etc. It is not typically found in plans for single family homes, but it is a convenient way of getting this information together in one place for all to see.

MISCELLANEOUS DETAILS

Other drawings may include deck framing details, rake (the overhang at the end of the house) details, or other special framing situations.

THE SPECIFICATIONS

Whatever you don't show in the plans must be spelled out in the specifications. Many people use a standard, six-page, fill-in-the-blank specification form called *Description Of Materials*, which is published by the federal government (HUD-920005, VA Form 26-1852, Form FmHA 424-2). The advantage of using this form is that it will help you to remember each section of the home. Also, as mentioned above, it is a recognized industry standard. In fact, your lender may require it. A copy of the form is included here. Or you can go directly to HUD's web site here.

The problem with the form is that it is difficult to design a standard form which includes spaces for all the different methods of construction, especially as new technologies emerge. Still, this form is very well designed, and has stood the test of many years of use, for the construction of millions of homes.

Another example is also included. It is a form developed by a Savings and Loan, and is called *Building Specification Information*. It is simpler than the HUD form but seems to be fairly complete. Notice the note just under the title to this form ... (Not a Complete Description). How true! Look at Number 6 (Windows) for example. There is no space to specify brand names. If you don't already know it, there is a tremendous difference in price between "generic" wood windows and brands like Pella and Andersen.

If you find you don't have space to include all you would like to say about a particular part of your home on the standard form, attach separate sheets. It is important that you spell out in detail what you intend to do.

GETTING YOUR PLANS DRAWN UP

SOURCES OF PLANS

One way to go about getting the plans and specifications you need to build your home is to hire an architect to draw them up for you. Or you may get them from a residential design and drafting service. Finally, you could do them yourself.

USING AN ARCHITECT

Many architects do not do house plans unless it is a very *large* house. Some architects do, however specialize in residential design. To find an architect, start with referrals from friends, family, or acquaintances. The local chapter of the AIA (American Institute of Architects) may be able to give you a list of local architects who do residential design. Of course you can always start with the yellow pages.

When you first meet the architect, ask to see some examples of his work . . . plans, photographs, etc. Find one whose work you like. Ask for references and talk with two or three home owners. You'll want to find out how the architect is to work with. How was he about making changes during construction . . . attitude and price? Were his plans accurate? What did the builder and the subs have to say about them?

USING A RESIDENTIAL DESIGNER (OR PLAN SERVICE)

A less expensive alternative to using an architect is to find a residential designer or plan service. Almost all large towns have one or more of these. In most states, a person does not have to be a registered architect to do residential design within certain limits (number of stories and, in some cases, total cost of construction).

The reason for this is that licensing laws are designed to protect the public - not the professionals they regulate! Typical residential construction practices have a great safety factor built in. This is because they were developed without being subject to the discipline of structural engineers. Later, when traditional residential structures were analyzed, they were found to be overstructured by a factor of two to three.

To give you an example, a 2x4 used to measure 2 inches by 4 inches. It was reduced to $1-3/4" \ge 3-3/4"$, then to $1-5/8" \ge 3-5/8"$, and finally to $1-1/2" \ge 3-1/2"$. This has allowed the saw mills to get more 2x4's out of a log . . . conserving trees and increasing profits . . . all without sacrificing safety! In addition, many current studies now promote the spacing of wall studs at 24" o.c. (on center), rather than the traditional 16" o.c.

So you see, the old system of using lumber that measured a full $2" \ge 4"$ at 16" o.c. was *overstructured*. The new system is still well within the limits of safety!

Therefore, residential designers are allowed to practice unlicensed. These people offer their services to individuals and to the home building community. Usually, they will have a group of "stock" plans from which to choose, and will make modifications to suit your needs (for a fee).

If you cannot locate one of these services, you can usually find one or two of their plan books on the magazine racks of your supermarket. Also, many of them advertise in the homes magazines. Many people order their plans by mail. Of course, many, many are available on the Internet. One of the advantages of using one of these plan services is that their plans usually include a list of materials. This can be a useful *starting point* for your materials takeoff. We say "starting point" because you'll probably want to make some changes in what materials are used. Takeoffs are discussed in detail in Lesson Eleven.

If you are not too hard to please, you might even find a stock plan that .will suit your needs unmodified. If so, you could technically skip over to Lesson Nine and start the planning of your construction schedule. Most people want a little more choice over how their home will look. In any case you'll need to make decisions on finishes, equipment, etc., so you will certainly profit from the material in Lessons Five through Eight.

DOING YOUR OWN PLANS

Some people draw up their own plans. Unless you are specifically trained in residential design, you will probably not be totally successful in doing this. That is, your drawings will probably have to be redone by a draftsman to include all of the details needed to actually construct the home. If you have some drafting experience, or are so inclined, you may give it a try. You may find it more difficult than you had anticipated. There are a lot of dimensions and relationships that are critical. If you don't know what they are, you may end up with a design that really doesn't work.

Click <u>here</u> to see a set of hand drawn plans for a small, three-bedroom, great room home. Notably missing from these plans are the side elevations, the site plan, and the window and door schedule.

A better alternative would be to explore some of the residential design software that is readily available. These programs will give you a professional looking set of plans, and will often calculate the materials you will need. You may find them limited, though, if your design is more complex or if you have local conditions which dictate construction techniques not included in the program. A CAD (computer aided design) program can overcome these shortcomings. But these programs are costly and have a very steep learning curve.

PLAN CERTIFICATION

If you plan to use FHA or VA financing, your plans will have to be *certified* by an architect or engineer. This is to assure the federal agencies that your plans meet the minimum requirements they have set for residential construction.

HOW MUCH AND HOW MANY

Stock plans from a *plan service* will cost you under \$1,000. Specifications that come with a stock plan are probably not going to fit your needs, so you'll have to rework them. Custom plans from a plan service are often billed per square foot of *heated* space (excluding garages, porches, etc.). The rate will depend on where you live and the talent/reputation of the designer. You pay for what you get! Having a registered architect prepare your plans and specifications is usually the most expensive route. Typically, architects charge 10% of the cost of construction for the design, but this could vary greatly. You'll have to get a quote.

Five sets of plans should be sufficient for construction. You'll want one set put away for safe keeping and one set for yourself. The other three sets will bounce between whatever suppliers and subcontractors are currently working on the job. Make sure they all understand that the plans are to be returned when their portion is completed. You may need additional sets for the bank, FHA or VA, and the building official who issues your building permit. These requirements vary from place to place, so you'll have to do some checking to see what your needs are here.



In this lesson we took a close look at what is actually included in the Plans and Specifications. We found that the Plans are the drawings and include such things as: the *Foundation Plan*, the *Floor Plans*, the *Ele*-

vations, the Site Plan, and various Construction Details.

The Specifications, we learned, spell out in writing those things that are difficult to show in a drawing, like the model number of the various appliances.

Finally, we talked about how to actually go about getting your Plans and Specifications prepared and what you can expect to pay for this service.



In the next lesson we will begin the first of what will eventually be three complete "trips"

through the home - this time looking at all of the things about which you will get to make *design decisions* and choices. Future trips through the home will focus first on *cost estimating* and then on *construction superintending*.





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