struction are: Land Survey Requisition, AIA Document G601; Change Order, AIA Document G701; Certificate of Substantial Completion, AIA Document G704; Certificate of Insurance, AIA Document G705; and Contractors Affidavit of Release of Liens, AIA Document G706A.

Besides these documents, AIA produces a handbook with useful information for those who are contemplating building. Chapter reprints are available at a nominal cost. The chapters that contain especially helpful information are: chapter 13, General Conditions of the Contract for Construction; chapter 16, Selection of Contractors; and chapter 17, Owner-Contractor and Contractor-Subcontractor Agreements.

One of the greatest pitfalls you can unwittingly fall into with an unscrupulous or careless builder is the mechanic's lien. This lien on real property is created by statute in all States in favor of persons supplying labor or materials for a building for the value of the labor or materials supplied by them.

Clear title to the property cannot be obtained until the claim for the labor or materials is settled. It is important, therefore, to receive a sworn, or notarized, document from your contractor that all labor and materials used in your home are paid for.

In case of inclement weather or other reasons, it may be impossible to complete all of the work on your dwelling at a specified time. This may include such things as walks and drives, certain difficult-to-get pieces of equipment, landscaping or other items.

However, the house may be substantially completed and otherwise be ready for you to move in. When this happens, it is not unusual to withhold the cost of these items plus a small percentage and set up an escrow account to be released at a specified time when the work is completed to your satisfaction. That enables you to move in and to make a final payment less the escrow fund to the contractor. Most home financing agencies are amenable to such an arrangement.

When you make final settlement with your builder, do not forget to obtain from him all guarantees, warranties, operating instructions, and other descriptive material concerning equipment placed in the house. This would include material and warranties on such things as roofing, water heater, cooking range, refrigerator, dishwasher, disposer, heating and cooling equipment, and any other equipment or materials guarantees that apply. These should be stored in a safe place, where they are available for easy reference.

Usually gas and electric companies will send a service representative to explain the operation and maintenance of the various items of equipment to get you off to a good start. You should become thoroughly familiar with the operation and maintenance of your heating and cooling system.

Building can be frustrating and fun. It is a great experience. As you sit back in your armchair before a roaring blaze in the fireplace of your comfortable new home with the winter winds howling outside, reflect upon this adventure and give thanks that the fireplace is not smoking because you picked a good designer and builder.

Many Constraints Will Affect Your Plans for the Site and House

IDEALLY, HOUSE PLANS and site plans should be developed together and complement each other. All too often they clash. Hillsides are bulldozed level to build ranch houses where two or three step hillside houses should have been built. We see split level houses on prairie lots, requiring construction of unnatural earth mounds around one house corner so that sliding glass patio doors do not open 6 feet above grade.

Most site planning problems have alternative solutions. Usually there is not a clear cut "right" or "wrong" answer. The task of the designer is to find out what the alternatives are and what the consequences of their selection will be.

In starting his job the site designer should first determine the restraints which apply to his site. More often than not, he will find these restraints are of a natural or a legal nature. Sometimes they will be a combination of the two.

Natural constraints are those imposed by the characteristics and features of the site. Steep slopes, generally those over 12 percent, are difficult to walk on, and to mow and maintain lawns on. They are subject to severe soil erosion and can be difficult to use for on-site sewage disposal systems.

Some steep slopes have been known to creep or slide down hill, taking the house with them.

In northern latitudes, slopes which slant down toward the north, commonly called north slopes, will retain ice and snow longer on sidewalks and driveways than will south slopes.

A garden on a south slope will generally permit "green thumbs" to start work earlier in the spring and to continue longer in the fall than will one placed on a northern slope.

The prevailing wind direction should influence both house and site design. Most localities have seasonal changes in prevailing winds. Strong fall, winter, and spring winds from the northwest suggest that a patio be located on the south, southeast, or east side of the house—thereby allowing the house to provide some shelter for the patio in the spring and fall.

If that is not possible, then a patio might require erection of some type of wall to serve as a windbreak. In this case an attached garage placed in the northwest corner of the house will cut down on the heating bill, not require as large a home heating system, and reduce drafts in the house on cold winter nights.

Soil conditions affect both the house and the site design.

Soils that shrink and swell a great deal with changes in their moisture content will cause sidewalks to crack and heave up.

High water table soils can result in wet basements and soggy yards, to say nothing of failing septic systems and tracked-in mud.

A soil that is excessively drained will make it difficult to maintain a lawn. It will require a lot of sprinkling and if local water rates are high, this can be expensive. In some communities water shortages have resulted in bans on lawn sprinkling.

Soils that are shallow to rock can provide picturesque and unique yard settings while at the same time being difficult to build on. Today's house requires a great many utility and energy services. Many of these enter the house from underground sources. Blasting and digging through rock in order to install a utility service can be costly and troublesome.

Legal restraints or limitations influencing the siting of residences and their accessory buildings may be local, State or Federal in origin.

Local laws such as zoning ordinances, building codes, housing codes, health ordinances, sanitation codes, flood plain regulations, and deed restrictions all have to be considered. For the most part, these controls are enacted, administered, and enforced by municipalities, townships, or counties.

Frequently, the individual States have set minimum standards for construction, water supply, waste disposal, highway access, flood plain use, etc., which can also influence the siting of a building on a parcel of land.

In some cases Federal departments or agencies have minimum standards which have to be complied with if the Federal Government is providing direct

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financial assistance or if there is a federally guaranteed mortgage on the property.

Practical experience has shown that where local ordinances exist, are reasonably current as to their requirements, and are enforced—then a project which complies with them in all probability will also comply with State and Federal regulations. However, do not automatically assume that this is so.

Zoning ordinances frequently establish front, side, and rear yard setback requirements as well as limitations on the permitted height of buildings and other structures.

Setback requirements establish the minimum distances back from a street property line to the principal or main structure, the distance in from both side lot lines that must be maintained clear of building, and the distance in from the rear of a lot that must be maintained free of buildings.

The height limitation for both principal and accessory structures is sometimes set forth as a specific number of feet and inches and at other times as a number of stories. In some cases they are combined. For example, the ordinance might permit a three-story structure in a residential zoning district so long as its maximum height does not exceed 35 feet.

Some ordinances set forth side yards as percentages of the width of the front of a lot, others set forth a specific number of feet and some will use a formula combining both percentages and specific minimums.

Setback and height restrictions, which are often referred to as bulk regulations, and the techniques of determining them were simple when most urban building took place on rectangular lots created within a gridiron street pattern.

Contemporary subdivision designs often do not conform to a grid street pattern and today many lots are not rectangular. Consequently, complicated formulas for calculating setbacks and height regulations have sometimes been incorporated into zoning restrictions. Yard setbacks actually define the buildable area within a lot—or, if you will—a lot within a lot.

Another restriction often found in zoning ordinances deals with the type and height of fences, hedges, gardens, and free standing walls. These restrictions are important when dealing with site design problems because they influence such things as the location, type and size of patios, gardens, play areas, service entrances, driveways, etc.

Building codes generally will involve the structural design, performance standards, and specifications for the construction of buildings. Often the codes deal with establishing minimum floor elevations and the finished grading of the building site. They play an important role in site design by setting forth requirements for exterior building materials, window and door sizes as well as type of foundation, roof drainage, lot grading and standards for free standing and attached garages, carports, breezeways, etc.

For example, a code requiring that the exterior of all building walls be built of masonry materials would influence selection of materials to be used in constructing an attached patio. This requirement would have architectual consequences and in all probability influence the patio's total cost.

As in the case of zoning ordinances, before starting to develop a site design you should familiarize yourself with the applicable building code and determine which parts of it will influence the project.

Housing codes usually set forth minimum design standards for various types of dwellings, and minimum maintenance standards which must be met. Some overlap and deal with standards normally found in building codes. They may also overlap health and sanitary regulations.

In general their primary purpose is to establish minimum overall liveability and maintenance standards which apply to both the interior and exterior parts of the dwelling as well as the lot.

Health and sanitation codes influence site design to a much greater degree

than most people realize. This is especially true in areas where private or on-site wells are used for water supply and where septic systems are used for sanitary waste disposal.

The codes usually establish minimum distances which must separate these two utilities, and set design standards and materials specifications for both wells and septic systems. Distance requirements apply not only to the individual lot being considered, but also relate to facilities on neighboring lots.

In subdivisions where the designers have not considered location for well and septic facilities, it is quite common to find that some lots will not meet the sanitation requirements. This frequently occurs in older subdivisions platted before establishment of modern day health and sanitation standards.

A number of different soils are found in the United States and each has distinct capabilities for assimilating the effluent from septic systems. Because of soil conditions it is not uncommon for the septic system to require more square footage of lot area than the principal structure.

Such a large number of variables enter into the proper design and operation of septic systems that it is almost impossible to establish any hard and fast rules concerning them. Just a few of the factors that must be considered when designing and siting a septic system are the number of people using it, slope of the land, soil porosity, depth to bed rock, the local rainfall patterns, nearness to lakes, creeks, or drainage ditches, existing and proposed trees and shrubs, historical flooding, and ground water table.

It is not considered good practice to have driveways, parking areas, or accessory buildings located over septic tanks, lines, or fields.

Some types of trees and shrubs will die if their root zones are continually saturated with the effluent from septic systems. Other species will thrive in locations where septic effluent is available—often they grow so profusely that within a couple of years their roots will penetrate the tile field and completely fill the line, causing the system to fail.

If an on-site septic system is to be used for waste disposal, determining all the detailed requirements governing design, installation, and maintenance of the system is a *must* first step.

Local and State flood plain regulations often play a major role in site design. Even if your chosen site is not on a lake, river, or stream, you should investigate the local flooding history. Many a beautiful lot purchased during a dry season has become a dreadful nightmare during a wet period.

Local flooding conditions can develop in just about all types of terrain. However, areas where the landscape is relatively flat or nearly level can be the most difficult to evaluate from a flooding standpoint. In these areas relatively small amounts of rainfall can cause streams and rivers to overtop their banks and spread water out for miles on all sides.

The amount of flood plain data that is available to, and recognized by, local authorities will vary. In some cases good reliable data is readily available while in others the pickings are rather meager.

The local soil and water conservation district and the local office of the U. S. Geological Survey are two agencies which can often provide information concerning the type and the severity of local flooding and can advise you whether your site will be affected by it.

However, these agencies do not conduct individual lot surveys. If they indicate that your property might have a flooding problem, you serve your own best interest by securing the professional services of someone intimately familiar with local conditions. Have him determine just where the flood plain is in relation to your property.

Keep in mind that you may construct your house so it does not suffer directly due to flooding, but in this day and age of underground services, it is possible to have electrical, gas, telephone, sewer, and water services interrupted as a result of flooding.

Low lying roads which serve as access roads may also become impassable or washed out. If this happens, your home is isolated from both regular and emergency services as well as communication with the rest of the community.

The first step in dealing with a site design problem is to investigate all restrictions enforced by all governmental and financial institutions which are relevant or relate to the project.

Bear in mind, though, that requirements can vary considerably from one jurisdiction to another within the same general locality. Just because you are familiar with county requirements does not mean you can assume they will be the same in a municipality within the county. This is especially true in suburbia where often the lot next door is in another political jurisdiction which has completely different regulations.

The second step is to make a complete evaluation of the natural features and their limitations.

Site plans and house plans should be developed simultaneously. All major features of a house plan should be reviewed in light of the impact on the site plan, and vice versa.

Cheap Construction Costs a Bundle, So Look Carefully Before You Buy

JOHNNY AND SALLY could talk of nothing else but the little three-bedroom cottage. They had seen the for sale sign that day in the older neighborhood built after World War II by an out-of-town contractor. He came along and began underbidding all of the long established builders in our town.

You remember that contractor, don't you? Most people wondered at the time how he could charge less and still provide attractive houses with all kinds of shrubs and flowering trees.

At a barbecue supper in our backyard, many of our friends were commenting that Johnny and Sally should buy the place because it sure looked like a dream house. The young couple were all excited but their enthusiasm cooled a bit when they learned that the house had been on the market for 6 months. I thought this a good time to suggest they see the inside of the house and check the structure itself.

I noted that in purchasing an automobile they would inquire about engine performance, brakes, gas mileage, safety features, warranty, and many other details. This same common sense approach should be used in buying or building a house.

Too many times the way a house is built is of little concern to a potential buyer. The attractiveness of the front exterior becomes the chief concern, and aside from that almost anybody's construction standards will do. High standards of construction, and how the floor plan design functions for the family, are hardly ever considered.

Standards of construction are set for your protection by the local, county, or State building codes and also perhaps by the government lending agency that insures or guarantees the housing loan. Plans and specifications for the house are generally drawn to provide design and construction according to these standards or codes.

Unfortunately, many families pay little attention to the established construction standards. Any standards will do as long as they can get the house in the shortest possible time and at the least cost. The most costly purchase of a lifetime is treated as though it were an insignificant article on a bargain counter.

Little wonder, then, that there is a class of builders with low prices as

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