

# **DESIGN/BUILD MATRIX**

Always design a thing by considering it in its larger context:  
a chair in a room, a room in a house, a house in an environment,  
an environment in a city plan.

- Eliel Saarinen



# DESIGN/BUILD MATRIX



For the Owner with an optimistic "*can do*" attitude, the Design/Build process may seem manageable ***and indeed it is***. The "*Design/Build Matrix*" on Page 11 illustrates how one might begin to arrange the complexity of information so decisions can be made sensibly and sequentially. This arrangement allows an Owner ***to focus on one block of information at a time*** in order to translate the requirements of one's lifestyle into Contract Documents which will direct all activities for the home building project.

For the Design/Build Matrix, there are two dimensions: the **DESIGN** dimension which sequences the flow of major events for creation of Drawings and Specifications; and the **BUILD** dimension which sequences the flow of major events during construction. As the focus of these two dimensions, the Owner's requirements for the house and site are considered and become more than a tangle of ideas. This is a process of ***progressive approximation*** where ideas are presented, problems identified, solutions considered, and decisions refined and finally made. As one concentrates on each block of information, there is a progression towards a final solution which gradually approximates **WHAT** products and materials will be used for creation of one's homestyle by beginning with vague notions and ending with specific choices.

The Design phase precedes the Build phase taking into consideration the Owner's needs and desires in written and graphic form. A reasonable amount of time must be allotted to address all aspects for design solutions. The purpose of this section is to provide definitions for the terms used on the "*Design/Build Matrix*" on Page 11.

The Design phase is generally defined as follows:

**\*Schematic:** Define Owner's lifestyle, site conditions, and relevant code and zoning standards; study alternative ideas and cost ranges for each possibility.

**\*Design Development:** Consider schema and sketches most

apropos for Owner and site; develop more definitive plans, and update Budget Estimate.

- \***Contract Documents:** Create Drawings and write Specifications through a series of conferences by Owner; prepare documents for code and zoning compliance and building permit application.
- \***Bid/Negotiations:** Prepare Contract Documents for contractor Agreements and Conditions of construction; establish budget guidelines and secure proposals from Trade Contractors and Suppliers.
- \***Construction Observation:** Check materials and methods at critical points during construction; review Trade Contractor's completion of work and application for payment; up-date design, budget, or products if required by changed conditions.

The Build phase follows the Design phase utilizing materials and products chosen by the Owner and defined by the Drawings and Specifications. Supported by Suppliers, each Trade Contractor completes a major component of the construction project. The Build phase is generally defined as follows:

- \***Site:** Combines geographical location, topography, climate orientation, water, geology, trees and vegetation, views, and noise considerations.
- \***Foundation:** Transfers building loads directly to soil by use of footings, walls, slabs, piers; anchors building to site to avoid racking or uplifting.
- \***Framing & Roofing:** Provides structural elements of floor, wall and roof systems; acts as a barrier to heat loss, moisture and air infiltration; creates aesthetic form.
- \***Exterior Finish:** Includes windows, doors, siding, gutters and downspouts; allows physical, visual, and light penetration; creates stylistic detail.
- \***Plumbing:** Supplies potable and utility water, sanitary drainage, and sewer disposal; trim package contributes to interior decor.

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- \***HVAC:** Generates heating, ventilation, and air conditioning systems; trim package and vent caps lend to decor.
- \***Electrical:** Distributes energy for light, heat, and operation of appliances and equipment; trim package adds to interior design; services installed for television, telephone, security, and office.
- \***Insulation:** Controls heat loss or gain in floors, walls, and ceilings; weatherizes doors, windows, and sills; offers sound deadening for interior spaces.
- \***Drywall:** Covers interior walls and ceilings for finishes and fireproofing; texture and corner trim contribute to decor package.
- \***Interior Finish:** Establishes color, texture, pattern, and scale of interior design motif; includes paints, doors, hardware, trim, closet kits, cabinets, floor coverings.
- \***Landscape:** Arranges vegetation, walks, drives, lighting to marry house architecture to site; allows drainage of stormwater; places gazebos, decks, patios, summer kitchens, gardens for climate orientation and lifestyle.

Don't be overwhelmed by the scope and complexity of information.

A good way to begin using the Design/Build Matrix is to label manila files with the five categories of the Design Phase and the eleven categories of the Build Phase. As you consider different aspects for each of the Design/Build events, you should place notes, drawings, and ideas into each respective manila file. Don't try to finalize decisions. **Remember: *this is a process of progressive approximation.***

Once you've initially reviewed the major events of the Build phase, you'll feel more confident with your original ideas and begin to weigh and consider alternative ideas (**Schematics**) based on considerations such as code and zoning standards, costs, lifestyle requirements, and aesthetic quality. Your manila files will begin to bulge with ideas and the "*Design/Build Collage*" (See "*Design/Build Collage*" on Page 128) will unfold as an artistic endeavor.

You'll start over again as you refine ideas gathered for each of the Build events and progress into **Design Development**. More than likely you'll be creating additional manila files to expand your growing information base. For instance, your "*Exterior Finish*" file may be expanded into separate files for windows, doors, siding, stormwater control (See "*Cardboard Box Files*" on Page 129). Your original ideas become more definitive plans and the Budget Estimate becomes more accurate.

At this point your homestyle should be clearly defined, and you're now ready to create **Contract Documents**. Depending how adept your drafting and writing abilities, it may become especially important to retain the professional services of a Construction Manager, Architect, or Designer if required by your situation. The creation of Drawings and Specifications are crucial to code compliance and successful building permit application so be prepared for a collaborative effort.

For **Bid/Negotiations** to occur, the Owner must have ample copies of Drawings and Specifications in hand to circulate among Trade Contractors and Suppliers in order to solicit their bid proposals. Depending on how skillful your legal and negotiating abilities, the Owner might consider the professional services of a Construction Manager, Lawyer, and Accountant if required by your situation. The preparation of Agreements and Conditions for the work to be performed will refine your Budget Estimate and begin to determine who will provide labor and materials for your project.

Although there's always room for improvement, you should realize any major changes or deviations may cause financial and logistical problems as you move into **Construction Observation**. Quality Control involves checking materials and methods as each phase is completed but changing conditions may cause the Owner to up-date the design, budget, or products. Your lending institution will require on-site review of construction in order to authorize payment for work completed, and formal inspections by building officials will also occur at critical points in the schedule.

Keep in mind that minor corrections or "*fine tuning*" is always necessary. It's unlikely every detail will be determined. Good advice is to be a stickler for detail yet allow yourself the freedom to make some decisions later realizing that this "*fine tuning*" is accepted as part of doing construction. **Let the Design/Build Matrix be a map to guide you through this process.**

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BUILD	DESIGN				
	SCHEMATIC	DESIGN DEVELOPMENT	CONTRACT DOCUMENTS	BID/ NEGOTIATIONS	CONSTRUCTION OBSERVATION
SITE					
FOUNDATION					
FRAMING					
ROOFING					
EXT FINISH					
PLUMBING					
HVAC					
ELECTRICAL					
INSULATION					
DRYWALL					
INT FINISH					
LANDSCAPING					