

INTRODUCTION

Building your own home is a once-in-a-lifetime experience. Something you dream of, but not something you already know how to do. Suddenly, you have to take a whole lot of decisions on things you usually know little or nothing about.

Estimating costs and time, dealing with architects and contractors, locating and buying land, securing home loans, selecting building materials, overseeing construction...

This guide will take you, step by step, into the entire process of building your own home. It is designed to arm you with knowledge while providing you with useful tips. We hope this will help in making homebuilding a simple, easy and joyful experience for you.

Happy Home Building!

STEP-BY-STEP HOME BUILDING

The whole process of homebuilding becomes easier if you know what decisions you need to take and when.

If you are clear about your own priorities and preferences at each step, you can't go wrong.

Follow the simple steps shown below to know exactly how to plan your homebuilding according to your needs and the availability of funds. Best of Luck!

STEP ONE

- ▶ Discuss your needs with your family
- ▶ Consider your family/household size, present and future
- ▶ How many rooms, bathrooms, storerooms, verandah, any other facility - of what size, for what purpose?

All this will make budgeting and planning that much easier.

Example : Let's say you are clear you want a two bedroom flat with a small garden. For this, say, you require at least 1500 square feet (sq ft) of land, of which 750 sq ft is the built up area.

STEP TWO

Your two major cost components are land and construction costs.

A. Find out approximate cost of land in the area of your choice = Rs. _____/sq ft x area required in sq ft = Rs _____

B. Make an approximate construction cost estimate Rs _____/sq ft x built-up area in sq ft = Rs _____

Therefore, the total cost of your home would be A+B

Example: If the cost of the land you have identified is Rs 200 per sq ft, and you need 1500 sq ft, your cost is Rs 200×1500 sq ft = Rs 3,00,000 (A)

If the cost of construction with a base finish (given below) is Rs 450 per sq ft, then for a built-up area of 750 sq ft, your cost is Rs 450×750 sq ft = Rs 3,37,500 (B)

Total cost of your home is Rs $3,00,000 + Rs 3,37,500 = Rs 6,37,500$

What building your home would cost you in year 2001

Type of finish	Cost per sq ft	Description
Superior finish	Rs 650 to Rs 1000	High quality flooring, electrical and sanitary fittings, paints, timber, kitchenware etc.
Medium finish	Rs 450 to Rs 650	Medium quality flooring, electrical and sanitary fittings, paints, timber etc.
Basic finish	Rs 350 to Rs 450	Ordinary quality of finishes such as a neat cement finish

Construction cost varies with quality of interior finishes and fixtures. Cost projections shown above may increase by 8 to 10% per year. This table does not include cost of land.

STEP THREE

You can generate funds through: (see section on home loans)

C. Your own savings and

D. Borrowings

Therefore, total funds available would be C + D

Example : If you have savings of Es 1,00,000 (C) and you can organise a loan of Rs 4,00,000 (D), then total funds available for homebuilding is Rs 1,00,000 + Rs 4,00,000 = Rs 5,00,000

If the budget estimate, as in step II, is more than funds available, go to STEP IV. Else start planning for construction. In the two examples above in STEPS II and III, the budget estimate of Rs 6,37,500 is greater than Rs 5,00,000, which is the fund available to you. So you need to rework your estimate.

STEP FOUR

Look for less expensive land further away from the city centre to reduce land cost.

Reduce the built-up area. Reduce the size or number of rooms

Ask your architect to design your house to allow phase-wise construction, so that you can build part of it now and add rooms later, when you have the funds.

Reduce land requirement. Say, instead of 1000 sq ft on one floor, opt for two floors of 500 sq ft each.

This will not only reduce your land requirement it will also save on your construction cost by 10 to 20%.

Following the examples given in STEPS II & III, let's revise the estimate following the guidelines above:

Example:

Locate land where prices are, say, Rs 140 per sq ft instead of Rs 200 per sq ft instead of Rs 200 per sq ft.

Reduce land area from 1500 sq ft to 1350 sq ft. So the total cost of land comes to as follows:

Rs 140 x 1350 sq ft = Rs 1,89,000 (A)

Earlier it was coming to Rs 3,00,000

Reduce built-up area from 750 sq ft to 650 sq ft, for the present

Reduce cost finish marginally from Rs 450 per sq ft to Rs 425 per sq ft. This way, cost of construction becomes Rs 425 x 650 sq ft = Rs 2,76,250 (B)

Leave scope of addition for one more bedroom of 100 sq ft at a later stage.

Now the cost becomes

A+B = Rs 1,89,000 + Rs 2,76,250 = Rs 4,65,250

(This amount is within the funds available to you and also leaves you with some extra money for unplanned expenses.)

KNOW YOUR PEOPLE

Family, friends, relatives, the professionals that plan and build your home... It helps to know who does what, who can help you, how, and on what terms.

- Friend/Relative** People who have recently built homes can be a big help. Talk to them. They'll be only too happy to share their experiences with you.
- Broker** A middleman with resources to locate land according to your needs for a fee (generally 1 to 2% of the land cost).
- Architect**  The professional who analyses your requirements, prepares first sketches, then the home plans. He designs your home to make it look beautiful. He may guide you through the entire process. His technical skills and experience can help you cut costs on land, building materials and save you time and money.🔍
- Engineer** Works with the architect in designing the foundation and structure. May be involved in the entire project to oversee construction work. His inputs are critical for the safety and durability of your home.🔍
- Lawyer** Conducts the search process for verifying the legal status of the land you want to purchase. Draws up the necessary documents of sale and registration.
- Contractor** Takes up a contract for building your home from organising labour, building materials and equipment to getting the construction work done. The scope of his responsibilities may vary widely. Consult your architect about your contractor's scope of work and terms of payment.🔍
- Labour Contractor** Takes up the contract for supplying skilled and unskilled workers for construction. His payment terms could be on a per square foot basis or a per man day basis. (The former is preferable.)
- Mason** Lays the bricks and concrete, makes the foundation, makes the slabs and does other such work. Often called the Rajmistry.
- Carpenter** Handles all the wood work - doors, windows, frames, furniture and so on.
- Electrician** Ideally a licensed electrical contractor who lays the electric lines for your home. Also plans layouts for concealed wiring and electrical accessories in consultation with the architect and you. May also help in getting you the power connection.
- Painter** Does the priming and finishing jobs in painting exterior and interior walls, wood work and is involved in other such areas.
- Labourer** Does the manual jobs such as fetching and carrying materials - bricks, concrete, light structurals. Usually hired in teams and paid by contractor/labour contractor.
- Plumber** One who lays the water pipes and helps in setting up the sanitary fittings and sewerage connections.



Professional bodies such as Indian Institute of Architects and Directories such as Real Estate Directory and Yellow Pages can give you more information about Architects/Engineers/Contractors. Architects, building material dealers and hardware stores are good information sources for Labour Contractors. Paint stores, furniture and electricals stores can help you with information on Painters, Carpenters and Electricians respectively.

WHO DO YOU HIRE, ON WHAT TERMS

Selecting Architects/Engineers

▶ Ask your to-be neighbours/friends/relatives who have recently built their own homes about the architects/ engineers they engaged:

- ✓ Did their homebuilding process run smoothly? What were the problems?
 - ✓ Did their work finish on time? What could have been the causes for delay, if any?
 - ✓ Were the initial budget estimates accurate? Did they exceed the budget? Why?
 - ✓ Did the architect/engineer help in solving layout problems or budget problems by suggesting good alternatives?
 - ✓ Did the architect/engineer offer useful suggestions when needed?
 - ✓ Were the architect/engineer present on the job frequently?
 - ✓ Did they face any problem after moving into their home? How were they solved effectively? Who solved them?
- ▶ Check if they are chartered architects/engineers.

Getting the best from your Architect

- ▶ The key to a successful home plan and project is clear communication with your architect:
- ✓ Give him a realistic budget to work on - a good architect can modify a plan to fit the budget
 - ✓ Take time to decide on the important details and share these with your architect - flooring for rooms, bathrooms, furniture and cabinets - especially built-in items, storage lofts, kitchen table-tops, electrical and sanitary fittings, placement of appliances (TV, music system, fridge, oven, washing machine, computer...)
 - ✓ Discuss future needs. Extensions, possible partitioning, conversions for renting out. Addition of fixtures such as an antenna the roof or a clothesline?
 - ✓ Fix the rates and terms of payment before work starts and discuss all important issues frankly



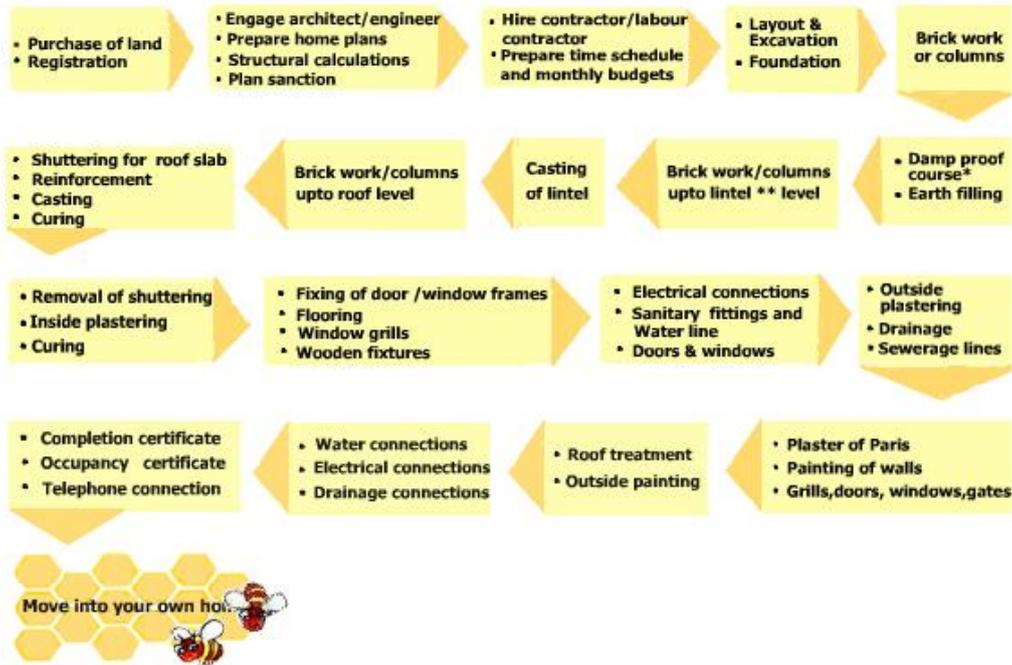
(Payment terms are usually fixed on the basis of rupees per sq ft of built-up area or a certain percentage of the overall construction cost.)

Selecting Contractors/Labour Contractors

- ▶ Check out the current commercial terms, the terms quoted to you, and compare with rates from at least three or four sources
- ▶ Discuss with your architect the scope of the contractor's responsibilities, the kind of materials he will supply, the kind of equipment he has - such as the quality of shuttering material, the concrete mixer, vibrator, any other equipment because later these could become sources of dispute
- ▶ Before deciding on the cost of materials from the contractor, do visit the market and find out for yourself

» Check contractor's/sub-contractor's registration/licence (such as electrician or plumber)

HOME BUILDING.. START TO FINISH



WHERE TO BUILD YOUR HOME

Steps for choosing land and location

1. First, broadly identify localities in the city/town where you want to build. Look at real estate classifieds, maybe even the Internet. Visit the areas you are interested in and talk to a few local real estate agents. Ideally buy a map, put down the prices on the map according to the area.
2. Once you've shortlisted your options, check out the civic amenities. Drainage, sewerage, garbage disposal systems. Street lighting. Roads and transport links. Proximity to market, post offices, banks, schools, ration shops, police stations, medical facilities. Power availability. Atmospheric pollution and even traffic noise.
3. Based on initial quotes, make your budget estimates (refer to Home Building Decisions). Now decide which area fits your budget.
4. There may be a choice of plots available within the area you've identified. Talk to at least two or three brokers to get the best bargain.

Thumb rule on land prices

- » Land along a main road would cost more than plots on side roads
- » Land on certain prime locations in a city would cost more than elsewhere
- » Similarly, land prices would decrease as you go away from the city centre and from main markets
- » Because of rapid urbanisation, land prices rise much faster than inflation. Hence, buy the land for your home at the earliest while you plan the other steps of homebuilding

The all important legalities

Before you actually invest in a plot...

- ▶ Establish how the intended seller acquired the property in the first place
- ▶ Check the address and reputation of the broker as well as the landowner
- ▶ Get your information first hand. Visit the site. Ask the seller and local inhabitants about it. Have it measured
- ▶ Go through the legal documents. It might be wise to hire a lawyer to conduct a search at the municipal land records office, and the courts of registration/mutation to see if all the papers are in order:
 - ✓ landowner's title deed (at least a true copy) and the latest tax receipt from the land revenue department
 - ✓ confirmation (through the Registrar of Assurance) that the plot is free of mortgage, legal disputes and other such issues
 - ✓ ask for a copy of the master plan as approved by the Town and Country Planning Board or similar authorities and make sure the land in the area you've identified is earmarked for residential use
- ▶ Ensure you pay stamp duty while registering the Sale Deed as this will prove the validity of your ownership

ABOUT HOME LOANS

The present situation is more favourable than ever

- ▶ Many banks and home financing companies are competing with each other to give you loans
- ▶ Lower interest rates, 12 to 15% per year - depending upon the amount borrowed
- ▶ Faster clearance of applications
- ▶ Almost 80 to 85% of the cost of your home is given as loan amount
- ▶ Longer the time for repayment, lower the Equated Monthly Instalments (EMI)

It's important for you to plan early. Ideally, you should start building your home by the age of 35. So that, you will have enough time to repay your home loan within your working career.

How much do Home Loans cost you

Don't worry if you don't understand the complexities of finance. Request your bankers to explain to you clearly the net payment you need to make every month. Using the table below, just compare the net payment per month for the same amount and for the same period offered by different banks/financial institutions. The lower the net payment, the better it is for you.

Net Monthly Payments per Rs 1,00,000 (EMI + other fees)			
Repayment Period			
Banks/HFCs	10 Years	15 Years	20 Years
HDFC			
ICICI			
SBI			
Other Banks			

- ▶ When you take a home loan, find out how much you need to pay every month. Other than EMI, look at the administration fee, processing fee and any other costs
- ▶ A great deal of Income Tax savings are possible with home loans. This can be used for paying your EMI Interest calculation is best done by the daily reduction method, which is better than the monthly reduction method, which in turn, is better than the annual reduction method
- ▶ Ideally, you should choose the bank which does not require a guarantor and offers home loans without pre-payment penalty (or a penalty for repaying loan before it is due). So that you can repay your loans earlier, if possible
- ▶ Once you move into your own home, you save on your rent. This can be used to pay your EMI.

Sources of Home Loans	
Banks	State Bank of India, Corporation Bank, Punjab National Bank, Central Bank, Dena Bank, Bank of India, HSBC, Bank of Maharashtra, Benaras State Bank, ANZ Grindlays, Citibank and many more
Public Sector Housing Finance Companies	BoB Housing Finance, Can Fin Homes, GIC Housing Finance, LIC Housing Finance, Ind Bank Housing, PNB Housing Finance, SBI Home Finance, Centbank Home Finance and many more
Other Institutions	HDFC, ICICI, LIC, HUDCO and others

Example: If you want to build a home worth Rs 5,00,000 you need to put in up to 20% of this amount from your own savings (such as Fixed Deposits, Shares, PPF, UTI or any other capital savings). This means you can borrow up to Rs 4,00,000 for which you need to pay $4 \times \text{Rs } 1400 = \text{Rs } 5600$ per month.

What Banks/HFCs require to give you home loans

If you are a Salaried Employee

1. The latest salary slip showing statutory deductions
2. Form 16 (showing tax deducted at source by employer)
3. Proof of age (birth certificate/voter identity card/passport/school-leaving certificate/valid driving licence)
4. Proof of residence (phone bill/electricity bill/ration card).

If you are Self-employed

1. Computation of income for the previous two years, certified by a Chartered Accountant
2. Profit & Loss Account and Balance Sheet for the previous two years, certified by a Chartered Accountant
3. Proof of age (birth certificate/voter identity card/passport/school-leaving certificate/valid driving licence)
4. Proof of residence (phone bill/electricity bill/ration card).

Armed with all this information, you can now go to several banks and HFCs and get more details and explanations to get the lowest cost loan for building your home...

BUILDING MATERIALS



Cement

Cement is the binder that holds concrete and mortars together. Which is why it plays the most critical role in giving strength and durability to your home. It is used to make concrete for slabs, foundations, beams, columns, lintels, chhajja (sunshades), and mortar for brickwork, plastering, flooring and other such work.

Cements used for domestic building such as your home are basically of three types:

▶ Portland Slag Cement (PSC) conforming to IS:455

A combination of good quality blast furnace slag (from the iron and steel industry) with clinker (which makes OPC) and gypsum

▶ Portland Pozzolana Cement (PPC) conforming to IS:1489 A combination of fly-ash (from thermal power plants) with clinker and gypsum

▶ Ordinary Portland Cement (OPC) 33 Grade conforming to IS: 269, 43 Grade conforming to IS: 8112 and 53 Grade conforming to IS:12269 A combination of clinker and gypsum

Good quality cements have the following features:

- ✓ Reduced water requirement
- ✓ Improved workability
- ✓ Less permeable to moisture
- ✓ Improved resistance to acids and chlorides
- ✓ Reduced heat of hydration
- ✓ Easier to finish
- ✓ Reduced shrinkage
- ✓ Reduced leaching problems because it is low on free lime



The colour of cement has no relation to the strength characteristics.

The right cement and its application

- ▶ It is very important that you use only a reputed brand of cement. Good brands of cement may cost 2 to 5% more but offer quality, consistency and reliability as well as 10 to 20% greater strength characteristics. Cement accounts for a mere 12 to 18% of the total expenditure on your home. So, using cheaper cement gives you little overall savings
- ▶ Cement must be added to the concrete and mortar in a precise, consistent manner. Too little or too much cement in concrete can cause lower strengths, shorter design life and lower durability
- ▶ Ask your engineer/architect whether you can alter the ratios of the mix. Never try to save on cement use by diluting the concrete mix. Remember, that by using 30 to 40 bags less of cement, you would save no more than Rs 3000 to Rs 4000. But it could permanently weaken a building that costs Rs 5,00,000 to Rs 7,00,000 to build!
- ▶ Please note that good quality blended cements like PSC and PPC will take more time to set and gain early strength in lower temperatures during winter than OPC, but final strengths at 28 days will be high
- ▶ Cement must be kept dry, say by covering with tarpaulin, until final mixing into a construction material.

Proper selection of sand is critical in the durability and performance of your concrete mixture. It should be:

- ✓clear, angular and hard
- ✓free from clay, mica and soft, flaky material
- ✓graded, which means it should be a mix of fine, medium and coarse sand
- ✓free from contaminants like sea salt
- ✓consistent in moisture (water) content which should not exceed 7%. When mixing concrete the moisture content must be taken into consideration.

The price of sand includes three or four components - base cost, transportation, handling and number of intermediaries. Procuring sand in bulk directly from the source will be cheaper. Your neighbourhood dealer in this case is likely to be costlier, except when you need smaller quantities.

Stone Chips

Technically known as coarse aggregates, stone chips are a major ingredient of concrete, giving it strength and solidity. The quality of concrete depends very much on the characteristics of aggregates used.

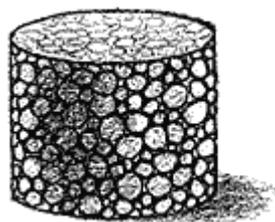
- ✓Stone chips should be angular or round, not flat or flaky
- ✓They should not contain marks or layers of any other colour
- ✓They should be free from mud and other impurities, which are harmful for concreting. It is advisable to wash the stone chips before mixing to make it free from dust, dirt and mud.

Tips for selection

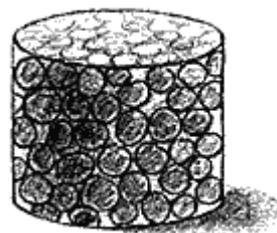
Aggregates should be well-graded. Which means these should contain sizes from 5mm to 20mm in proper proportion, so that voids are minimal. This will make a strong and durable concrete. At the same time, this will save on cement (see diagram below).

Stone chips are generally sold or supplied in multiples of 100 cubic feet (cft). A standard truck generally carries 300 cft of aggregates. This is calculated by multiplying the carrying area of the truck by the average depth of the load, measured by inserting a rod at four to five points to calculate the mean depth. A shrinkage of up to 2% per truck is allowed.

Price is a function of ex-works (quarry) price + transportation cost + handling + involvement of intermediaries. One should get aggregates from the source to get the best price. Always insist on graded aggregates and not on 'pure' ones.



Graded aggregates-all sizes in proportion give denset concrete



Single-size 'pure' aggregates-result in voids within the concrete & more cement consumption

Caution:

You may end up paying more for 'pure' aggregates because aggregates are sold in volumes. So, a given volume of 'pure' aggregates will give you less weight because of larger voids between the chips.

Reinforcing steel

Reinforcing steel contributes to the tensile strength of concrete. Concrete has low tensile, but high compressive strength. The tensile deficiency is compensated by reinforcing the concrete mass through insertion of plain or twisted mild steel bars. Both branded and unbranded bars are available. It is wise to buy good brands, the names of which are marked on the steel. During construction, make sure that steel reinforcement is provided exactly as the engineering design specifies

Precautions:

- ▶ Steel bars/rods should be reasonably clean and free of rust
- ▶ Bars that cannot be easily bent manually or mechanically should be rejected
- ▶ Optimum length bars must be chosen to reduce wastage in cutting
- ▶ To avoid laps, shorter bars must not be accepted
- ▶ Welded lengths of bars should not be accepted.

Water

It is very important to use clean, potable water in quality concrete production. Brackish or salty water must never be used. Contaminated water will produce concrete and mortars with lower durability, erratic set characteristics and inconsistent colour.

Bricks

Bricks are distinguished by their base (raw) material and size. Standard burnt clay bricks come in the size 10" x 5" x 3". Modular bricks, rarely used because they are not easily available, come in the size 200 mm x 100 mm x 100 mm (including mortar thickness.) Fly ash bricks, sometimes, also come in modular form.

Conventional bricks have a 'frog' (depressed/raised portion) on one of the larger surfaces bearing the manufacturer's brand. These also provide a good mechanical key for bonding (i.e. lockability) with mortar. The modular bricks do not have the 'frog' on them. Fly ash bricks exhibit almost similar mechanical properties as burnt clay bricks. Exposed brickwork with precise pointing is possible if the shapes are perfect.

How do you recognize good bricks?

- ✓ They show uniform texture and colour
- ✓ When broken, they leave no lumps and grit

Precautions:

▶ Ensure that bricks are not made from saline clay. Look for proper and uniform burning.

The four broad categories of bricks used in construction:

1st Class Bricks	2nd Class Bricks	3rd Class Bricks	Jhama/Overburnt Bricks
<ul style="list-style-type: none"> ▶ Perfect in size/shape ▶ Red to cherry-red in colour ▶ Do not break when dropped from waist height ▶ Do not absorb more than 15 to 17% of their own weight if kept submerged for 1 hour under water ▶ Suitable for precision work such as exposed brickwork 	<ul style="list-style-type: none"> ▶ Not so uniform as 1st class bricks in shape/size/quality of burning ▶ Do not absorb more than 25% water of own weight if kept submerged under water for 1 hour ▶ Good for brickwork wherever subsequent plastering is to be done 	<ul style="list-style-type: none"> ▶ Much inferior to 2nd class bricks in terms of shape/size and burning 	<ul style="list-style-type: none"> ▶ Absolutely out of size and shape, overburnt, fused with more bricks, with a honeycomb texture ▶ Dark red to black in colour ▶ These bricks are unsuitable for any kind of brickwork, and are only used in broken pieces for consolidation of foundation soil and sub base of floors

Buying Tips

- ▶ Bricks may be purchased directly from the brick fields located close to your area at a lower cost
- ▶ Keep samples for conformity to ordered quality

MAKING LONGER LASTING BUILDINGS

Make sure your Contractor/Rajmistry

- ✓ carefully selects the building materials such as sand and stone chips. He must wash them thoroughly 24 hours prior to dhalai, then
 - ✓ lets them dry
 - ✓ keeps the shuttering totally watertight
 - ✓ checks for the cover blocks of 15 mm x 15 mm x 15 mm under the reinforcing bars
 - ✓ uses wooden boxes of a specific size, for convenience of batching. He must have at least 4 to 6 boxes made, of 1.5 ft x 1.5 ft x 1 ft or slightly larger size, as convenient for the labourers. This ensures uniform proportioning
 - ✓ uses a mixer machine for best results. If hand mixing is necessary, he must use 10% additional cement and a pan large enough to provide uniform mixing
 - ✓ uses only enough water to obtain the minimum workability. Additional water weakens the concrete and greatly enhances cracking potential. For a 1:2:4 mix, when the aggregates are dry, addition of water must be restricted to 28 to 30 litres per 50 kg bag of cement. For a 1:1.5:3 mix, addition of water must be restricted to 25 to 26 litres per 50 kg bag of cement. If a vibrator is used, water must be reduced by 5 to 10%

✓uses a vibrator vertically for proper compaction. Concrete must not be over vibrated or moved with the vibrator

✓does not add water while spreading or compacting

✓plans in advance to have all materials present at the site when concreting for a roof slab. This is because interruptions or breaks in concrete operation like that of a concrete roof slab can give rise to joints and thereby weaken the structure and this can lead to seepage problems at a later stage. He must also make sure that the mixer machine along with the vibrator and fuel are readily available in place. Concreting should start early in the morning. No interruptions must be allowed until the entire roof slab has been concreted. Concreting operations must be avoided during peak hours of high temperature in summer. Concreted portions must be covered to avoid direct sunlight which reduces evaporation losses

✓starts curing by mildly sprinkling water after concrete has set. This can happen around 12 to 15 hours after casting at a temperature around 27°C

For floors and roof slabs - 3" high bunds of 2 ft x 2 ft must be made with cement, sand, mortar (1:6). After 24 hours, the bunds must be filled with 2" deep water. Till the entire curing period is over, generally between 14 to 21 days, the bunds must always be full of water.

For columns - after the shuttering is removed, they must be wrapped with used jute bags which must be kept wet by intermittently sprinkling water at least 3 to 4 times a day, for at least 3 to 4 weeks.

For beams - after the side shuttering is removed, these must be wrapped with used jute bags which should be kept wet as in the case of the columns. Or else, water must be sprayed at least 5 to 6 times a day, for at least 3 to 4 weeks.

▶ The concrete work must be stopped in case it starts raining between the operation, and the concreted portion well covered with a plastic sheet in such a way that water drains off easily. Ideally, concreting must be avoided during rain or if rain is imminent.

▶ Ask your engineer to follow the standard code for removal of shuttering and the recommended curing period and method.

Removing shuttering early is not good.

PAYING ATTENTION TO DETAILS

▶ Ask your architect to plan your interiors well in advance:

✓the positions of switchboards and plug points. This will depend on where you place your kitchen mixer, TV, audio system, fridge, washing machine, computer or other such equipment

✓the positions of almirahs and other large furniture with regard to doors/windows

✓built-in cupboards and storage areas

▶ Correct sloping for the bathroom and kitchen floor should be provided to allow efficient drainage

▶ Correct sloping should also be provided for the roof surface to allow efficient drainage of rainwater (stagnant water can create seepage problems later on). The joint of the rain water pipe at the roof slab should be effectively sealed so that seepage problems do not occur in the future

▶ Ensure concealed electrical conduits are placed prior to concreting/plastering

▶ Stair roof doors should always open outside so that the rain water does not enter the house

▶ Individual shuttering planks should have a smooth, flat surface. The planks when placed together

