

# House Construction Pakistan (Facebook) Notes:

## Abstract:

This document contains important discussion, opinion and experience share regarding House Construction in Pakistan. It is effort to organize the discussion and make previous posts readable. The discussion is currently taking place on fb group:

<https://www.facebook.com/groups/384121145118016/>

For participation in discussion, suggestions and improvements, join the above mentioned group.

Keywords: house, construction, Pakistan

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## 1. Budgeting To Build a High-End 5 Marla Home, Posted by Fahad Khan Hoti

### 1. Covered Area

In established housing societies of Pakistan, a certain amount of area has to be left uncovered in the form of side and back alleys, as well as a front yard or lawn. These construction bylaws are followed stringently in many posh residential communities. Out of the 1,125 square feet (5 marlas), approximately 1,000 square feet of land can be used as covered area. Therefore, the following rates and material presuppose a covered area of 1,000 square feet. Let's also assume that you already own the land and the plans of the house are already approved by the authority concerned.

### 2. Labor Costs

The labors who work with contractors usually stay with a project from beginning to end. For them, working on a project comes with job security and they are unlikely to charge extra. Their direct dealings with the contractor suits both parties and this partnership is most likely to work for the sort of construction quality you aspire to see in the house.

Labor cost is highly dependent on the construction period. While it suits the labors to prolong the work in hopes of continuing to make more money, the builder has a deadline to meet. This deadline commitment allows the builder or contractor to make sure that work is completed on time and according to the standards they promised.

When labors are hired through contractors, their wages are decided per the agreement, which, in the case of an A-category 5-marla house, expires in 3 months.

**Total Cost: PKR 500,000**

### 3. Grey Structure

#### a. Bricks

Approximately 50,000 bricks are required to build a 5-marla house. These bricks would be enough to build the grey structure from foundation to rooftop. The rate of bricks is dependent on their quality and prices range from PKR 6,000 to PKR 9,000 per 1,000 bricks.

For A/A+ category houses, high quality bricks are preferred by the owners. Additional bricks are required to erect the boundary walls of the house.

**Total Cost: PKR 500,000**

b. Gravel

Oddly enough, gravel (bajri) is measured in square feet when it comes to construction, and around 600 square feet of gravel would be required for a 5-marla house. The per-square-foot price of gravel is PKR 75. There isn't any specification of quality in gravel so its rate is roughly the same all over the country.

Another form of gravel (bajjar) is used to form the base of floors. Bajjar is made from broken up bricks, which acts as a firm foundation for tiled and/or marbled flooring. The contractors sometimes use the leftover bricks and have them broken up into smaller pieces to make bajjar, which is also measured in square feet. About 1,000 square feet of bajjar would be required for a double-story, 5-marla, A-category house. The per-square-foot rate of bajjar is PKR 40.

**Total Cost: PKR 45,000 (bajri) + PKR 40,000 (bajjar) = PKR 85,000**

c. Cement

The price of cement is PKR 500 per sack. Around 600 sacks of cement are required to build an A-category house. The rate of cement is set by the government and no brand can sell their product at a higher rate. So, no matter which cement brand you choose, be sure to pay the cost prescribed by the government.

**Total Cost: PKR 300,000**

d. Sand

Like gravel, sand is also measured in square feet, but contractors and builders calculate it by number of trucks. For a 5-marla house, five trucks of sand would be required.

**Total Cost: PKR 30,000**

e. Rebar

The rate of rebar (sarya) is PKR 85,000 per ton, and about 2 tons would be required for a 5-marla house.

**Total Cost: PKR 170,000**

f. Wiring

Once the grey structure is complete, it is time to do the electrical wiring. In many cases, the electricians work independently and are hired by the contractor. Two types of wires are used in houses, 3/29 gauge and 7/29 gauge. The former is used for the wiring of low-consumption appliances and the latter for high-consumption appliances.

Around 20 coils of 3/29 gauge and 6 coils of 7/29 gauge are required for the complete wiring of a 5-marla house. The average rate per coil of 7/29 gauge

wire is PKR 4,300, and that of 3/29 gauge wire is PKR 2,300. The service charges of the electrician and the total cost of the wire together constitute the wiring expense.

**Total Cost: PKR 100,000 (including wire cost of PKR 71,800)**

g. **Flooring**

The floors of an A-category 5-marla house are mostly done in tiles. Please note that although marble is cheaper, cutting, grinding and polishing makes marble flooring an expensive deal at the end. Good quality China-made tiles are preferred in high-end smaller houses. These tiles are mixed and matched with the more expensive Italian tiles in the form of patterns that add curb appeal to the floors. The cost of flooring the entire house includes bathrooms (3 attached, 1 powder room) as well.

**Total Cost: PKR 500,000**

h. **Woodwork**

Flooring is followed by woodwork. Wood is used in various parts of the house in the form of wardrobes, kitchen cabinets, doors, false ceilings, bathroom cabinets and decorative racks in the living room and drawing room. The rates may vary from vendor to vendor, but it is generally advisable to buy wood and let your carpenter carve it into cabinets and doors, rather than to purchase prefabricated ones from the market since you can't be sure of the material.

**Total Cost: PKR 350,000**

i. **Windows and Glass**

Aluminum and glass work in houses includes windows and window frames, wire mesh, metal frames, grills and glass panes.

**Total Cost: PKR 150,000**

j. **Sanitary Fittings**

Sanitary fittings include wash basins, commodes, taps, showers and kitchen sinks, etc. A-category 5-marla house is supposed to have high quality fittings. Please note that smaller houses often do not have bathtubs or shower cabins, so these fixtures are not factored into the price.

**Total Cost: PKR 300,000**

k. **Assorted Fittings**

Assorted fittings include doorknobs and locks, cabinet handles and switchboards.

**Total Cost: PKR 100,000**

l. **Finishing**

The paint job should be done ideally after installation of switchboards and light fixtures. Painting a newly built house is tougher since it requires careful application of the base coat. The grafi, which is done on the exterior of the house, has an additional cost as it is weather-resistant and keeps the exterior from falling apart.

**Total Cost: PKR 300,000 + PKR 100,000 (grafi) = PKR 400,000**

So there you have it, a rough but detailed budget (of **PKR 3,485,000**) for building a high-end 5-marla house. If you are planning to build a house rather than buying one, you can be sure of saving around PKR 2 million. So, dear readers, don't let the small hassle of monitoring the construction of your house make you pay extra, and enjoy the anticipation of shifting to a new home where you can make new memories!

## 2. Current Market Rates for Different Marbles for Flooring Purposes. Shared by Fahad Khan Hoti

1. Parlano micro = 120/sqft
2. Parlano plain eith light crystals= 105/sqft
3. Parlano crystal= 80/sqft
4. Parlano dhabba= 70/sqft
5. Flower= 60-65/sqft
6. Travera= 60-65/sqft
7. Ziarat supreme= 400/sqft
8. Ziarat A grade = 250/sqft
9. Ziarat B grade = 150-175/sqft
10. Ziarat C grade = 110-130/sqft
11. Ziarat white grey = 80-90/sqft
12. Ziarat badal = 50-65/sqft
13. Sunny white = 42-45/sqft
14. Sunny grey = 31-32/sqft
15. Zebra = 30-35/sqft
16. Super white = 120-180/sqft
17. Cheetah white = 150-200/sqft
18. Yara khel white = 600/sqft
19. Veitnam white = 600-800/sqft
20. Snow white = 700/sqft
21. Hilly cream/ loralai cream = 130-150/sqft
22. Boticina cream (limited availability) = 80-150/sqft.



Please note that Marble price per square foot varies from **Rs.28 to Rs.1300/sft** according to the size and quality of marble.

For example if you want to purchase Sunny Grey in size exceeding not more than one by two feet, it will cost you Rs.31-32/sqft. However if you go for size beyond the stated one, the thickness of material will vary and hence the price will jump to Rs.80/sqft including polish and gola if required. The same Sunny Grey if opted in slab size which is more than 12" of wideness, you will get it for around Rs.110-125/sqft including polish and gola.

Polishing is done at Rs.10-15/sqft and gola for marble at Rs.10/sqft. Polishing of Gola Is In Rft, (Shared By Ahmad Raza Shah Bagh Marbles Islamabad)

### 3. Bagh Marble Company Intro and Q&A

I am representing my company (New Bagh Marble Industry Islamabad) which is involved in processing and supply of different varieties and kinds of marble, granite, fire places and making decoration pieces of whatever shape as per demand. If anyone wishes or need any suggestions regarding this field, feel free to ask and inquire. Regards, Ahmad Raza Shah

**Q1.** Ahmad raza. Its good to hear from you. Kindly share ur adress and phone no. And also tell us in a seperate post that which is the best cladding stone to withstand weather and whats the per sq.ft rate. best flooring marble apart from parlano

**A.** H.42-B, St.41, I-9/2 Industrial area Islamabad. Contact: 051-4432950

**Q2.** Please share some rates and quality of marbles. Best to good. And also expensive to cheap. I need some 2500 sq.ft marble for one of my clients first floor. I can take rates from you

**A.** Sir cladding stone has a making cost of Rs.150 to 170/sqft. Cost of marble or stone used varies apart from that. This can be between Rs.5 to 50 according to variety. Plus profit is added to give a per square foot rate for the tile.

Sir there are a lot of other varieties that come from Baluchistan apart from parlano which is processed in Karachi however their availability is extremely limited and the vendors can ask for whatever price they wish. The color of those varieties is similar to parlano but varies in dullness or saturation. The texture however is different. One more thing to make it clear is that parlano or any other Baluchistani stone cannot be classified as marble scientifically because it is not calcium carbonate.

**Q3.** Yeah like zyarat golden which resembles parlano. I have observed that the veins in it often gets hacked with weather or whatever the reason. Observed it in flower and perlano. Daanay nikal aatay hay veins say

**A.** Marble price per square foot varries from Rs.28 to Rs.1300/sqft according to the size and quality of marble. For example If you want to purchase Sunny Grey in size exceeding not more than one by two feet, it will cost you Rs.31-32/sqft. However if you go for size beyond the stated one, the thickness of material will vary and hence the price will jump to Rs.80/sqft including polish and gola if required. The

same Sunny Grey if opted in slab size which is more than 12" of wideness, you will get it for around Rs.110-125/sqft including polish and gola.

Polishing is done at Rs.10-15/sqft and gola for marble at Rs.10/sqft.

Ahmad Raza Shah Sir that is true because there are holes that naturally occur in Baluchistani stones. They are often filled with jelly which cannot be observed easily in a polished sample. The jelly usually perishes with the period of time establishing back those wholes which were already present.

Locally it is known by the name of "Korh"

Sir you are welcome to visit our humble setup and we will make sure to satisfy your needs in the best possible way. We basically deal more in white marble varieties because Baluchistani stones has many times proven to be a gamble.

Current market rates for different marbles for flooring purposes are:

1. Parlano micro = 120/sqft
2. Parlano plain eith light crystals= 105/sqft
3. Parlano crystal= 80/sqft
4. Parlano dhabba= 70/sqft
5. Flower= 60-65/sqft
6. Travera= 60-65/sqft
7. Ziarat supreme= 400/sqft
8. Ziarat A grade = 250/sqft
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19. Veitnam white = 600-800/sqft
20. Snow white = 700/sqft
21. Hilly cream/ loralai cream = 130-150/sqft
22. Boticina cream (limited availability) = 80-150/sqft.

All these will have thickness of 4 soother or half an inch except veitnam white.

**Q4.** Do u have granite. I used granite of 20mm thickness. Red Ruby color. Whats the price.

2nd. Would the aforementioned marbles be needing polish or they are already

**A.** Sir granite is arranged from whole salers in Lahore and Karachi as per the requirement or even local market however with much competitive rates from them to the end buyers.

What was the size of red ruby? Does its width exceed one foot?

Sir these are ex polishing rates as flooring marble is usually polished after fixing. This is because it is very difficult for mason to fix them uniform.

Hoti: It was 2 by 2. 20mm thick

Sir if the size is cut from long sheets then you will get it at Rs.550-600/sqft. However if you can manage to find smaller sheets or left overs stock then you can easily manage to get it at Rs.400-450/sqft.

#### 4. Expert Opinion on efficient roof treatment for houses and market rates of wood and aluminuim, Shared by Sartaj Khan Jadoon

**Q1.** Please advise efficient roof treatment for house building and market prices of wood work and aluminium.

**Fahad Khan Hoti:** Jumbolawn board/extruded polystyrene spray has proved to be the best in both weathers. Diamond jumbolawn board are comparatively better. Similarly clay being a v good insulator. Clay Tiles is also a cheaper option. As jumbolawn must be covered by chips or marble. White chips in white cement. White marble like sunny white. Foam (Jumbolon Board) insulation is equally good for both seasons not only it maintains thermal comfot level keeping cool in summer but also keeps the house warm in winter.

This excerpt is taken from a report published by UN-HABITAT in partnership with the Ministry of the Environment, ENERCON and Capital Development Authority Islamabad, under the flag of delivering as One UN Pakistan Joint Program for the Environment, Outcome 5: Green Building initiated a Project to demonstrate and test measures to improve the thermal performance of housing, specifically to improve Reinforced Cement Concrete (RC) flat roofing. I hope this helps. Some other sealants are also used by different companies at around 25 to 35 rs per sq.ft. Wood work varies and depends on the carpenter. Avg rate is rs. 100 to 120 per sq.ft. This is labor. Ash wood is around 3800 per cft. And deeyar u can get for chowkat at 2500 per cft and free of knots on 3600 per cft.

Sartaj khan, where r u building ur house?

Panelling is at 50 per sq.ft. Aluminium double glazed chawla 2mm thick rate is about 650 per sq.ft. Chawla, lucky and ittehad. In wood u can get kail and merandee at 1400 per cft. Electrical works at 10 per sq.ft.

**Sartaj Khan Jadoon:** thank you Fahad Khan Hoti, its really helpful.

**Muhammad Arshad Hameed:** Fahad Khan Hoti Really having excellent grip on market rates

**Shahab Khan:** Fahad what do you mean by double glazed aluminium. I think you are referring with double glazed glass.

**Zehra Naqavi:** Shahab Khan, I think he is referring to it as Aluminum, double glazed Chawla glass 2mm thick.

**Fahad Khan Hoti:** Yeah with double glazed glass

**Shahab Khan:** Ok

## 5. Design and Architect Rates, Shared by Fahad Khan Hoti

Rs. 20 to 30 per sq.ft of covered area

Architectural details

Services design (plumbing, drainage, electrical, sewerage etc)

Structural details ( full steel, column, reinforcement details)

Courtesy: Muhammad Waseem, S&W Building Design

## 6. Million dollar question: Why we see dampness just above the skirting and even on 1st floor despite DPC and plinth protections? How to avoid it?

**Awais Raja:** I guess we must be aware of curing of plaster, if we done 1:4:8 for flooring prior to plaster we can avoid, and secondly in house construction mostly people ignore the vertical D.P.C that is equally important

**Fahad Khan Hoti:** Yeah but still this dampness comes out. Even if u do the aforementioned activities

**Awais Raja:** then the way is don't left the lower portion of masonry to be covered by flooring, must put plaster on it.

**Fahad Khan Hoti:** This can be answered by only a few

**Awais Raja:** I guess nothing else !!!more or less problem is same !!!! MULTIPLE reasons are there for dampness !!!! one can step up D.P.C in some cases , means D.P.C can be laid 9" above the floor .

**Fahad Khan Hoti:** Yeah that can be a good solution. The easiest way is to place a plastic just above the skirting

**Aazar Younas Khan:** Usually skirting is laid with bond, I think its the moisture from the bond/slurry that appears on the nearest plaster.

**Fahad Khan Hoti:** Its mostly due to curing and plaster work. The water all penetrates to the lower brick layer. Which needs to be protected either by plastic or by marble

**Muhammad Arshad Hameed:** Dampness appear above the skirting, there floor level may above the DPC (Damp proof Course), be careful about floor level with respect to DPC can also use double DPC to protect building from dampness Horizontal DPC as well as vertical DPC where there are two different floor levels with a wall

## 7. Wall paper and wooden flooring rates

Wooden flooring: Rs. 85 per sft reference Emarat Interiors. Phone: (051) 222-8492. Cell: 0335-077-7353, 0300-913-8989.

1. Korean wallpaper rate: Rs. 3400
2. Malaysian wallpaper rate: Rs. 2800
3. Chinese wallpaper rate: Rs. 2100

## 8. Thumb rule for steel, Shared by Fahad Khan Hoti

Thumb rule for steel:

1. 90 kg per cubic meter area of slab assuming 6 inch
2. 110 kg for footing

For slab under vibratory machine load. Use double mesh steel so multiply 140 kg per cubic meter

**Muhammad Arshad Hameed:** In footings 2kgs/cft, In Beams and columns 8kgs/cft, In RCC slabs 3kgs/cft, After calculating according to design bar bending schedule prepared and these figures comes in my experience.

**Shahab Khan:** 8kgs/cft seems to me on high side for columns in house construction. How much the percentage of steel comes out?

**Naveed Khan:** 3kg/cft also appears on higher side in rcc slab of house. If we provide #4 bars @ 9 in c/c than approximetly 1 kg per cft shall be required. for brick lintel 0.6 kg per cft is estimated steel.

**Fahad Khan Hoti:** Naveed if its double mesh thenu need to add laps, development lenghs etc also. Mostly its #6 in a composite to frame str

**Faisal Rehman:** One thing to note here that #3 @ 9 to 12 in c/c can work well in case of slabs. Usually the design uniform dead load of 30 psf and live load of 40 psf never experienced by slabs at the same time. Residential slabs aren't heavily loaded in its life.

Also structures never fails because of RC slabs. Columns and wall are more imp.

**Fahad Khan Hoti:** Yeah Faisal u r rite. Dead load is calculated whichever it its. It can't be fixed as 30. However live load of 40 must be taken as FOS. If walls are not load bearing then column and footings are the most important.

**Faisal Rehman:** Please note that the mentioned dead load is superimposed, additional to self weight of slab.

## 9. Checks on Local preparation of Concrete Mix.

1 wheel barrow = twice volume of cement bag and 2.25 cft flat levelled filling

Box = 1 cft. Box size must be checked on site and it can vary.

In 1:2:4 concrete

1 bag cement

1 wheel barrow sand (two bailcha less)

4 boxes of crush or 2 wheel barrow

Max 30 litre of water

Puddlo for water proofing 1 kg for 1 bag. Note: for water tank. 10 kg of puddlo be added.

## 10. How to pretreat seepage of basement and what is the best roof treatment?

**Fahad Khan:** Hoti Hanif Gohar sb would u share ur experience as i know u have this special exp. Moisture problems in existing basements are very common, but often are not understood or properly treated. In a basement that is seldom used and separate from the living spaces above, this may not present a great problem. However, most basements in Minnesota are connected to the rest of the house through ductwork or other openings. In addition, basements are increasingly used as finished living and bedroom spaces. In these cases, moisture problems are not only annoying and uncomfortable, but can lead to significant health problems. Molds and mildew can grow in damp carpets and beneath wall coverings. Finishing a basement without first dealing with the moisture problems can result in making health conditions worse and lead to significant damage as well. Basement water problems are solvable, but there is a cost to doing it right.

### 1. Understanding the problem

To correct basement moisture problems, it is necessary to understand where the water is coming from, and what mechanisms permit it to enter the basement. There are just three sources of moisture:

1. Liquid water from rain or ground-water
2. Interior moisture sources such as humidifiers, unvented clothes dryers, bathrooms, and cooking,
3. as well as the moisture in concrete after construction.

Exterior humid air that enters the basement and condenses on cooler surfaces. Moisture is transferred from the outside of the building to the basement interior by four mechanisms:

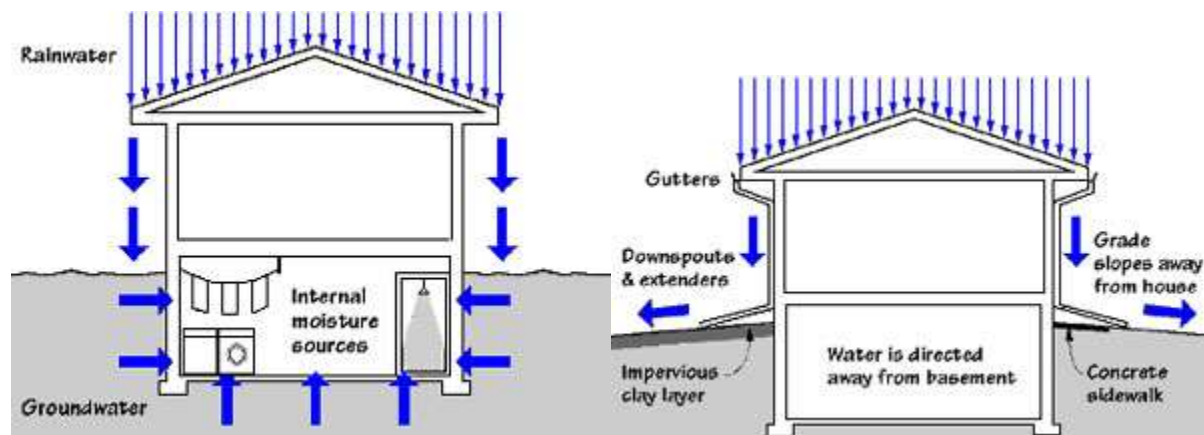
1. liquid water flow
2. capillary suction
3. vapor diffusion and
4. air movement.

Sometimes problems are traced to poor construction with cracking, settling foundations. In many cases, however, houses and basements can be structurally sound but are often not properly built to handle water drainage. Failure to slope the ground surface away from the foundation or lack of a good gutter and downspout system is common. Missing or nonfunctioning subsurface drainage systems are also found relatively frequently. These problems can all be addressed and corrected if a systematic approach is used.

This publication briefly describes moisture sources, moisture movement mechanisms, and typical basement moisture problems. Then, a step-by-step process for addressing each problem is presented along with several detailed approaches to solving the problem.

## 2. Symptoms

1. Water trickling out of walls
2. Standing water on floor
3. Saturated base of concrete block walls— a ring of dampness
4. Damp, humid air
5. Condensation on cold walls and floor in summer
6. Odor, mold, and mildew
7. Deterioration of carpet or wood
8. Rot and decay of wood headers, joists, sill plates, and columns
9. Staining and blistering of wall covering
10. Efflorescence, spalling of concrete or masonry



## 3. Inadequate grading

**PROBLEM:** If the ground around a foundation is level or slopes toward the house, water is directed into the basement. The soil next to the house is often backfilled without proper compaction and later settles. This is especially true under stoops where water can collect next to the basement wall.

**SOLUTION:** Place earth around the house so that it slopes away from the foundation wall a minimum of one inch per foot for at least six feet.

#### 4. Defective or missing gutters and downspouts

**PROBLEM:** Missing gutters and downspouts cause rainwater to be directed toward the foundation perimeter. A downspout without an extender or splashblock is worse than no downspout at all. It is depositing the huge volume of rainwater from the roof in a single concentrated location near the basement.

**SOLUTION:** Place a minimum of one downspout per 50 linear feet of roof eave. Extensions should discharge water at least four feet beyond the wall. Sloped concrete sidewalks around basements are very effective in directing rain runoff.

#### 5. Improperly designed window wells

**PROBLEM:** Window wells are like a drain right next to the basement wall. Often they are improperly built so that any water is directed toward, rather than away from the foundation.

**SOLUTION:** Window wells should be filled from the footing to the window sill with 3/8- to 3/4-inch coarse aggregate. A supplemental drain tile extension should extend from the footing to the base of the window well.

#### 6. Ineffective drain tile and sump pit

**PROBLEM:** Many existing houses simply have no subsurface drainage system. This comes from a time when basements were not used as habitable space. In other cases, the systems do not work for a variety of reasons, such as collapse of the pipe, clogging of the pipe with silt and/or tree roots, or a broken connection to the sump. The sump pit usually contains a pump designed to lift the water to the ground surface outside the foundation wall. This pump can fail.

**SOLUTION:** See Approaches 2 through 5 that follow.

#### 7. Improper drainage with underslab ducts

**PROBLEM:** If heating ducts are installed beneath a basement floor slab, the drainage system may be inappropriately left at a level higher than the duct. In effect, the duct becomes the drainage system, and with standing water within the heating duct, there are potentially serious health consequences from mold contamination.

**SOLUTION:** Heating ducts placed beneath the basement floor must be insulated, watertight, and sloped to collection points for drainage and cleaning. A drain tile and coarse aggregate can be placed under the ductwork.

#### 8. Structural cracks

**PROBLEM:** Concrete and concrete block foundations usually develop some cracks. They can be severe if floor joists are not properly connected to the foundation wall, thus permitting the wall to move. Also, soil settling causes cracking. Places where walls meet rigid structures like the fireplace often crack as well. Usually, drainage removes the water from cracks, but repair may be necessary.



**SOLUTION:** Proper footing design and proper connection between the foundation wall and the structure above are required (e.g. anchor bolts or straps at the sill plate and floor joists nailed to the sill plate).

### 9. An overview of solutions to basement moisture problems

The best way to approach any building problem is to first do the things that are easy and low cost. Then proceed in a logical order doing the next least costly technique with the most positive likely result. With moisture problems, the best approach is almost always to remove or control the source of the moisture, not to try to stop it at the last line of defense.

First, the simplest and least costly techniques are to remove excessive internal moisture sources in the basement (humidifiers, cooking) and ventilate other sources (clothes dryer, bathroom). Second, if condensation in the summer is the problem, do not ventilate the basement directly with warm, humid air. Ventilation through an air conditioning system or with a desiccant-type heat exchanger is recommended.

Dehumidification can be used as a means of reducing the symptoms of humidity and odor in a basement, but it is not a permanent or complete solution. In fact, if a dehumidifier is used in a basement with moisture problems, it may cause greater damage. By drying out the basement air, moisture is drawn into the basement more rapidly causing efflorescence and spalling of concrete and further damage to interior finishes.

It is appealing to solve a basement moisture problem with a membrane or coating on the inside. It is less expensive than a drainage system and seems to work for a time in some cases. The water is still there, however, and eventually these systems deteriorate or simply move the water to another pathway into the basement.

The recommended approach after removing interior moisture sources is to evaluate the gutters, downspouts, and surface grading around the house. These should be corrected first and may solve the problem. Then, if a moisture problem persists, proceed with an interior or exterior drainage system. All of these techniques are described in the remainder of this publication. If your goal is to finish a basement that has water problems, it is recommended to first deal with the water problem.

An active sub-slab depressurization system including a washed-rock layer below the slab is recommended. This draws moist air from beneath the slab and may help to reduce the amount of moisture vapor that enters the home through openings in the slab. It also assists in controlling radon and other soil gases. Sumps and other open connections to the soil outside the foundation and below the slab should be blocked and sealed.

### 10. Step by step process

Control interior moisture sources. If summertime, don't ventilate with outside air. Correct grading, gutter and downspout system. Provide an interior or exterior drainage system.

NOTES: A dehumidifier can help reduce the symptoms of humidity and odor, but does not solve the problem.

A membrane or coating on the interior without providing drainage generally will not solve the problem in the long term.

Walls must be dry before insulating. Slabs must be warm and dry before carpeting.

#### Approach 1: Install proper gutters and downspouts and correct grading

A great number of basement water problems can be solved by handling rainwater and surface drainage properly using gutters and downspouts with extenders or splashblocks to carry the water away from the foundation. Sloping the grade away from the house, which may require hauling fill to the site, is very important. This should be done before any below-grade drainage system is installed, since the above-grade corrections may solve the problem. Even if a drainage system is required, removing water at the source as much as possible is necessary.

#### Approach 2: Exterior drainage system

Installing an exterior drainage system at an existing building is the most costly, but also the most effective water control approach. This requires digging up the area around the foundation and rebuilding it similar to a new house installation. It also requires digging up shrubs and other obstacles around the house.

Usually, waterproofing and insulation are installed at the same time, in addition to making any repairs to the structure. The traditional exterior drainage systems use free-draining sand in the backfill. Drain tile can be placed beside or on top of the footing. Level drain pipe installations are satisfactory. A minimum of 12 inches of coarse aggregate should be placed around the drain tile.

#### 11. Free-draining membrane or board

It can be expensive to haul pea rock or sand to a site for backfilling purposes. Instead, a drainage mat can be placed against the foundation wall and then backfilled with any soil on site. The drainage must have a free-flowing path to the perforated drain pipe below.

#### 12. Draining to a sump

All exterior drainage systems must drain to a sump that can be pumped out. The sump must have an airtight, childproof cover.

#### Approach 3: Interior drainage channel above the concrete slab

In most cases when water is entering the basement, an interior drainage system is installed. The simplest and least costly approach is a drainage channel adhered at the base of the wall and the floor slab. Water is collected and drained into a sump using another channel placed on top of the slab, then through a trap to the sump basin. The sump should have an airtight, childproof cover. This system is best suited to a concrete wall with cracks. It does not solve the problem in masonry walls because water remains in the block cores at floor level and the water level is only lowered to the top of the slab. With this approach, the water is not completely removed from the space. The result is that humidity, mold, and mildew can still be a problem. This system cannot drain groundwater from under the floor slab.

#### Approach 4: Interior drainage channel within the slab edge

Another technique is to place a drainage channel at the base of the wall on top of the footing. This requires removing and then replacing the concrete along the slab edge. The drainage channel is connected to a drain pipe leading to the sump. The sump should have an airtight, childproof cover. This approach is effective for concrete masonry walls with water problems because it drains the block cores completely. Holes must be drilled at the base of every block core to permit drainage. This may require removing more than the minimum amount of concrete, as shown, to fit the drill in. These systems have different shapes and prices depending on the product installed. Because moisture is allowed to penetrate the block cores, it is essential to cap the tops and place a vapor-retarder coating on the interior basement walls.

#### Approach 5: Interior drainage system beneath the slab

The most effective of the interior drainage systems is a perforated drain pipe installed inside the perimeter of the footing. This requires removing and replacing concrete at the slab edge. By placing the drain pipe beneath the slab, it drains the area to a lower level. Similar to an exterior system, the drainage pipe connects to a sump. The sump should have an airtight, childproof cover. A critical component of this approach is the dimpled plastic sheeting placed at the base of the wall and beneath the slab edge. Dimpled sheeting is similar to a small egg crate and permits free drainage of the wall into the drain pipe. It is less expensive than many specialized drainage channel systems. In low permeability soils, this system cannot accept rising groundwater unless there is an aggregate layer under the slab.

It is recommended that this approach be combined with an active soil gas management system that connects with the sump and perimeter drain pipe.

**Waqas Masood:** Plinth Protection, very basic technique to stop surface runoff.

### 11. Q. 1 gallon paint covers 400 sq.ft covered area. Is it true?

**Ashar Ayub:** 275, Three coats

**Nauman Janjua:** Well its almost 10 s.m per liter and 1 gallon contains 3.64 liters.

**Mudasir Pervez:** 1 liter paint covers 7 sq.meter for triple coats

**Hanif Gohar:** Yes

**Shabbir Ahmad:** yes 1 liter covers 75.34 sq.ft

### 12. Concrete Works in Hot Weather

The ideal climatic conditions for setting and hardening are a constant temperature of 20°C and a relative humidity of 80 - 90 percent. High temperatures, combined with strong wind and low humidity enhance the rate of evaporation of the water required for the curing of the concrete. Hot weather will also reduce the setting time of the fresh mix, leaving less time for transport, placing and compaction. Finally, the lack of water as a result of hot weather makes the concrete prone to excessive contraction and may lead to cracks developing soon after placing. The loss of water as a result of hot weather also affects the

workability of the concrete during the period required for pouring and compaction. To secure the necessary consistency, additional water is required during pouring and placing which may compromise the final quality of the concrete. When carrying out building works in hot climates, it is preferable to schedule the pouring of concrete to the cooler parts of the day, either early in the morning or in the evening. The ingredients of concrete should be watered before use and should be stored in cool place.

### 13. Principle Concern in Construction Of House By Outsourcing

One of the principle concern in construction of house by outsourcing, either material or labour contract, is making a vivid agreement with clear terms and conditions. e.g., Things that are not covered in the agreed sq.ft covered area rate like boundary wall, facework, water tanks, treatment, false ceiling and the tricky one: windows etc. A contractor often tell these things to the client at the time of billing

**Fahad Khan Hoti:** Outer yard flooring, balcony shades, wicket gate and approach ramp, approach stairs , wood paneling

**Sami Ud Din:** Agreed. I am experiencing these things now a days. My contractor did not inform me about these extra charges at the time of agreement.

**Fahad Khan Hoti:** Well Sami Ud Din u have any question. do ask us. As we have a panel of expert engineers at this page. And do share this page to others, so that it helps them to save their money

### 14. Latest House Construction Cost, Rates and Estimated Time of Completion in Pakistan

#### 1. Labour Rate (Without material) Construction Cost:

1. Rates of Covered Area Rs.220/= to Rs.250/= per square ft.
2. Basement Rs.310/= to Rs.350/= per square ft.
3. Masonry work: Rs.25/= per square ft.
4. Plaster work: Rs.15/= per square ft.
5. Marble work: Rs.20/= per square ft.
6. PCC floor before tile / marble: Rs.20/= per square ft.
7. Excavation with machine (Free if you do not need excavated soil): Rs.2/= per Cft

#### 2. MATERIAL Rates (Updated on November 05, 2014)

1. Bricks: Rs.7,500/= for 1000 (Pattoki)
2. Sand lawrence pur: Rs.28/= Cft
3. Sand qiblabandee: Rs.25= Cft
4. Crush margalla: Rs.34/= Cft (if you buy directly from crusher)
5. Steel: Rs.88,000/= per Ton (it includes carriage, loading, unloading of 2000 tons)

#### 3. Grey Structure Construction Cost (including material)

Rs.1150-1200 per square ft.

### **What does Gray / Grey structure mean in construction? What is included in GRAY STRUCTURE and what is NOT?**

Finished (Turnkey) House Construction Cost

1. Rs.1,700/= per square ft. (Normally Good)
2. Rs.2,300/= per square ft. (Excellent)
3. Rs.2,600/= per square ft. (Luxury)

These rates does not include water tank, septic tank, porch area, main gate, and boundary walls etc.

Moreover Pergola (front elevations) rate are taken as 50% of covered area rate.

#### **4. Estimated Time of Completion**

Generally the contractor would be ready to make a contract to complete a home (up to six months) but practically completion is not possible before 8 months. Labour class goes to their native area and work is fully stopped for at least two weeks on each Eid, Moharram and in April (to take part in wheat crop cutting). In general, labour belongs to same family / area so in some Khushi Ghammi they leave the work and come back only when nothing is left in their pocket.

After understand all these factors I would suggest that one should keep at least 8 months in the mind for completion of a home but the contract should be made of 6 months. If mutually agreed then some plenty should be included in the contract clause in case the responsibility of late lies on contractor and vice versa. There is no harm for decided an appreciation clause if the project is completed before time. This may be Rs.500 per day if the work is late by 15 days and Rs.1,000/= for more period of time.

I understand that this plenty would be only to pressurize the contractor and a moral obligation. It may help in avoiding unnecessary delay in the work.

#### **5. Comments:**

**Buland Iqbal:** Well the rates vary from location to location, and I guess your focus was Lahore for these rates.

Overall I agree with the labor rates u mentioned but the item wise rates are slightly in higher side, for instance masonry rate is 14-15 rupees in normal days (in special days like near Eid or Ramazan it comes to 20-25). Plaster rate is 7-8 rupees (by best chitrali party). Likewise in material rates, as I said it depends upon location. Lawrence pur sand price in Islamabad is 13, and crush is 32.

**Naveed Khan:** Well the soil condition also varies from site to site. In peshawar when u construct a house in hayatabad u will get hard soil strata with bearing capacity of more than one ton per sft but when u construct it in shami road n warsak road area where bearing capacity comes out even less than 0.5 ton/Sft.than one must provide steel in foundation and plinth beam to overcome chance of settelment.beacuse in most of the cases foundation settlement is observed in 5 marla houses.

**Naveed Khan:** My question is whether this parameter is covered in the above mentioned rates or not?

**Fahad Khan Hoti:** Well u have to check the site and then design. If designer have added these, then rates will be accordingly adjusted

**Muhammad Arshad Hameed:** Bahut Ala Fahad Khan Hoti

**Nadeem Ilyas:** Rates mentioned are on higher side for construction in KP

**Ahmad Raza Shah:** One question sir, are the finished construction rates for double storey or single storey. I mean if it is a single storey, then the rates will be 850, 1150 and 1300/sqft?

**Faisal Rehman:** Fahad Khan Hoti: It is worth mentioning that labors and masons of Nowshehra are working at lower rates. Currently for my home at Taru Jaba, the rates of plaster is Rs 7 per sft. But for others they charge Rs. 7 - 8 for normal work and Rs 10-12 for eaves (chajja) and fancy work.

## 15. Q. What would you prefer for construction: Brick or Block?

**Fazli Imran:** Brick for myself. Block for profit

**Fahad Khan Hoti:** Bricks are actually a great insulators. Besides, The Great Wall of China is constructed and made of 3,873,000,000 individual bricks!

**Fazli Imran:** Moreover, the maximum number of joints in bricks masonry is very important and resistant to earthquake because the energy is dissipated via joints. So more stable as compared to blocks

**Fahad Khan Hoti:** Brick and block are both relatively strong materials, but their strength in a wall is affected by the type and quality of mortar holding them together. According to the Masonry Advisory Council, all concrete blocks must have a minimum compressive strength of 1900 pounds per square inch. Many dense blocks are stronger than this. According to Mechanical Properties of Unreinforced Brick Masonry, the average concrete block can withstand 3500 psi, while the average clay brick can withstand 3000 psi. High-cement mortars can withstand up to 2500 psi, while mortars high in lime are weaker, and may be able to stand only about 350 psi.

### 1. Cost

Both bricks and concrete masonry are relatively inexpensive. As of 2011, a single clay brick costs about \$1.50, while an 8 inch concrete block costs about \$1.35. Special lightweight blocks can cost as much as \$3.00 each. Labor can bring wall prices up significantly, however. According to the MAC, a single large lightweight concrete block can cost around \$11.00 installed, while a heavier block costs as much as \$15.00. Traditional brick masonry requires more skill than concrete masonry, and may be difficult to do on your own.

### 2. Weight

Grey concrete construction blocks

Concrete block and brick are both quite heavy materials. Their individual weight depends on the materials and type of construction, however. The average clay brick weighs around 5 pounds. Conventional 8-inch concrete blocks weigh around 43 pounds each. Autoclaved aerated concrete, or lightweight block, can contain as much as 80 percent air, and weigh as little as 20 percent as much as the same size conventional block.

**Fahad Khan Hoti:** Imran. Hollow blocks can be used for profit. But solid blocks would be contrary

**Fazli Imran:** Fahad, Yar if you stick to local conventional construction in Pakistan then you will find brick as the best.

The property of blocks u mentioned in the last post are of solid blocks whereas we use hollow blocks in pk. Much difference. ..

**Fazli Imran:** Uet pesh has done a lot work on blocks (hollow) and solid

the larger sizes of block is its biggest disadvantage for the reason that it is sometimes subjected to tension in the wall and get cracked

Whereas brick doesn't come across failure due to its smaller size and maximum mortar joints

**Fahad Khan Hoti:** Moreover fazle imran the disadvantage using concrete blocks is the fact that if the blocks are not made from proper mixture, or water treated/cured properly, they might crack. Whereas bricks do not normally crack like that.

**Fahad Khan Hoti:** The only advantage of using concrete blocks is that construction is faster as well. As 1 block = 9 bricks

**Fazli Imran:** U r absolutely right

To avoid cracking blocks ur construction should either be highly reinforced confined masonry or framed structure.

**Fahad Khan Hoti:** Building/constructing entire house out of concrete would make it too costly & heavier too. What about seepage

**Fazli Imran:** With block it wont be that expensive dear...

And seepage is another story..

Once you outsource the plumbing and sanitary work to a vendor, eg Dadex...

They will have to carry out proper pressure testing of the entire system

**Fahad Khan Hoti:** I m not talking about the seepage from pipes. I m talking about seepage from underground and rain

**Fazli Imran:** Hollow blocks are economical quick to raise a wall but... strength is the issue. Yaar dampness due to ground is not a issue nowadays. ..

Horizontal and vertical dpc and then plinth protection. ..

Issues of dampness come from plumbing works only.

**Fahad Khan Hoti:** Fazle imran. Area where table is near or near hilly areas, dampness in basement is a v big issue. I have seen it many times

**Samad Khalil:** Depends on area water logged or arid one

**Muhammad Arshad Hameed:** In brick work compare to block work there are maximum joints in bricks masonry Brick masonry is very useful for bonding as well as resistant to earthquake

**Faisal Khan:** What about a new kind of brick called eco bricks ([www.ecobricks.com.pk](http://www.ecobricks.com.pk))

Eco Blocks are high quality, cost-effective 'indestructible' blocks used in construction for all structures, covering...

ECOBLOCKS.COM.PK

**Fahad Khan Hoti:** Faisal Khan these bricks can be used in frame str but can not be used as load bearing wall due to low strength. No 2. IT COST U AROUND 35 TO 45 PER BRICK.

**Faisal Rehman:** I think both work fine. I would prefer the one that is economical.

**Ashar Ayub:** Fahad it depends upon availability of bricks. Blocks are costly.

**Zehra Naqavi:** Bricks it is for me. A lot of cost-effectiveness can be incorporated in a project budget through efficient planning and design. Less walls but with a strong material that can withstand load is my choice. Cost of a project can be reduced or brought within certain limits through efficient design.

## 16. Q. A question asked about plastering. Checks of plastering

Check sand quality: Check the fineness of sand as recommended in construction manual. Check sand are dust or dirt free.

1. **Check cement quality:** Check the grade of cement as specified in your construction manual.
2. **Cleanness of mortar-mixing platform:** Check the platform, on which plaster mortar will be mixed, is properly cleaned. The platform should not be wetted. It should be plain and dry.
3. **Screening of sand:** Check sand is screened before mixing with cement. So that any big particles from the sand can be removed.
4. **Cement-Sand Ratio:** Check cement and sand ratio is maintained for mixing as recommended in construction manual.
5. **Mortar Mixing:** Cement and sand should be mixed in dry condition. Check the dry mix is properly mixed before adding water. There is a tendency of masons to add water before mixing the mortar properly in dry condition.
6. **Water content in mortar:** Water content in mix should not be less or more. It should be appropriate as needed.
7. **Mortar using time:** Cement's initial setting time is 45 minutes. So, check the mortar is being used within 45 minutes after adding water. If necessary, separate some cement sand mix in dry condition. If you need it later you can add water with that. You can maintain a resister for tracking mortar mixing time.
8. **Thickness of plaster:** Suggested plaster thickness is 1/2 inch. But due to size variation of masonry block it can be 3/4 to 1 inch and above. If above one inch thick plaster is required in



anywhere that should be done in two coats. After doing 1st coat that should be roughed. And 2nd coat should be done next day.

9. **Lighting availability:** When plastering inside a building, check enough lighting is available there.
10. **Make a level mark:** Before doing plaster inside a room, make level marks with fresh mortar on all four walls. So that, after plastering room size is truly square or truly rectangular. Otherwise, when you'll fix floor tiles you'll face difficulties.

If you plan to plaster on ceiling, do the same for that also. In this case, make the level mark on beams around the ceiling portion

## 17. Thumb Rules for House Construction

Some thumb rules, which i made from my experience of construction of 4 houses.

Per sq.ft of covered area

15 bricks

1 bags cement

4 cft sand

4 cft crush

1.6 kg steel.

118 per cubic meter of steel

## 18. Tentative Rates

Turn key with material construction turn key = 1600 to 3000

1. Labor rate= 300 to 450
2. Gray str material = 800 to 1200
3. Gray str labor with straight age and trowel work= 200 to 250

**Hanif Gohar:** To much higher side

**Fahad Khan Hoti:** Hanif Gohar it would be highly appreciated if u share ur experoence and some useful tips and invite iqbal specially to this group. Helping somebody in constructing their house

**Fahad Khan Hoti:** By the way one side is higher and one side is lower

## 19. Solar Panels in Pakistan (August 22, 2015 post)

Variety of Solar Panels are available in electronics markets of Pakistan. These solar panels contains Monocrystalline and Polycrystalline PV cells.

The price of solar panel varies according to their quality and manufacturing design. Solar panels are available in 100-Watts, 150-Watts, 200-Watts and 300 Watts assemblies. The approximate size of one panel of 150-Watt panel is about 2-Feet by 6-Feet.

Solar Panel Installed in Pakistan

### 1. Price of Solar Panels in Pakistan:

1. A normal quality solar panel price ranges between 130 to 150 Rs. per Watt.
2. A Branded solar panel price ranges between 140 to 200 Rs. per Watt.
3. Local made Solar Panels price ranges between 100 to 230 Rs. per Watt.
4. Solar Charge Controllers Price in Pakistan:
5. 12 V / 24 V auto sense 10-Amp charge controller Rs. 3,230/-
6. 12 Volts 10-Ampere Charge controller Rs. 2,900/-
7. 24 Volts 20-Amp Charge controller Rs. 3,900/

### 2. Comments:

**Zehra Naqavi:** Muhammad Arshad Hameed please share information regarding solar panels installed by your brother in Jhang. Cost, efficiency, cost return, wattage, how many light points does it cater to, panel sizes etc. and what are requirements for its installation (battery type, location of panels etc.). Thank you.

## 20. Q. Why house facing in Islamabad is preferred towards or at 30 degree tilt from south? Which facing to be opted and y?

**Asfandiyar Shah Bukhari:** May be the max amount of light can be obtained? Keeping in mind the sun direction.

**Baber Rabbani Malik:** Install Sun Seeker app on iPad or Android phone. It's a great app. You can have you plot facing in google Earth and how sun targets your future home in different months.

**Fahad Khan Hoti:** I think one of the reason could be, that septic tanks are almost installed on the front and it needs sun, otherwise it would lead to an unhygienic and septic situation. Although u have to keep in mind, the direction of the wind also

**Alina Ahmad:** North facing is good cz u get morning sun, natural light of course which can save plenty of ur electricity bill

**Fahad Khan Hoti:** Alina Ahmad u r becoming an architect day by day

**Alina Ahmad:** Lol. Not really dear. um way apart from this field but through ur page people like me will get great information. So ur effort is commendable

**Fahad Khan Hoti:** Thanks. This page is just to serve the people

**Zehra Naqavi:** I just logged in. Okay here are some factors. 1: Islamabad is planned on a grid. So we don't have many options regarding tilting an orientation of a plot. Dominant direction of plots is N-S or S-N. Some odd ones planned later have a E-W or W-E orientation. Islamabad has a predominant north-

westerly wind direction (i.e wind direction is mostly from North West side which makes it from Margalla side. So if you want a good ventilation, use the North side windows. wind direction from Pindi side is very less but for sunshine south facing is the best for dominant part of the year.

We have about a minimum of 8 months of sunshine in Islamabad, which is truly a blessing if we observe closely. During summers, sun altitude is high and sunlight (day light) hours are on a maximum, while during Winters, sun altitude is very low and we hardly have a few hours of day light with either a weak sunlight or simply a weak day light. During winters, sun travels from East to south very quickly and from south to west even more quicker. North side hardly gets any light and that is why North-facing houses or buildings have dark fronts (no direct day light entering rooms). Thus we hardly get any day light from North during winters. South side gets maximum light mostly in these 8 months.

Now for the question which side is to be preferred: depends on the daily schedules of the occupants of the house - those paying rent don't have a choice really smile emoticon If the lady of the house is not a working woman (i.e. not working in an office or business) and is mostly at home, then a North facing will do as she will mostly be in the kitchen or living room (which will automatically be on south)...excellent day light and sun, with ventilation. If all are working, then North or south don't matter since occupants will be reaching home in the evening mostly. So they will lose a chance of any day light. North side remains very cold during winters due to lack of sunlight.

**Fahad Khan Hoti:** Thanks Zehra Naqavi for a wonderful justification/explanation.

**Zehra Naqavi:** Thank you for your kind appreciation. I am glad you liked it.

**Awais Raja:** All explained above is Quite informative , But i think orientation of Houses may vary according to geography , as in Hot areas Nobody will like to get maximum sunlight all the day .

And in Hilly areas right in toe of Any mountain like Gilgit city all is not applicable and Can't b generalised for all areas .

**Zehra Naqavi:** Awais Raja the post's query is specifically related to Islamabad. Otherwise conditions vary according to different geographical locations and weather conditions.

**Fahad Khan Hoti:** Zehra Naqavi please share ur company name and office adress at my inbox

**Awais Raja:** ok , i was talking generally not specifically about islamabad , and the information provided by you is really applicable for CAPITAL CITY.

**Baber Rabbani Malik:** Install Sun Seeker app and one can have exact idea of your further home's relation with Sun in winter and summer.

**Zehra Naqavi:** Je Fahad Khan Hoti sahab, I will send you information within an hour or so insha'Allah.

## 21. Opinion Regarding Earthquake factors while or before construction

DrEngr-Naveed Ahmad Mayar (my friend) we r waiting for ur input regarding earthquake factors to be considered while or before construction.

**DrEngr-Naveed Ahmad Mayar:** For RC you should consider additional earthquake loading in design before construction. However, for masonry few simple interventions should be included during construction with the code specified minimum recommendation for material property (quality of units, mortar) and geometric detailing (wall thickness, height, length).

One more thing, recent research studies have shown that seismic demand in islamabad is now almost double or even more than the code specified.

I am currently working on a project for PDMA for investigating few issues encountered in the RC design for earthquake loading with the aim to improve design practice in Pakistan.

Confining members, lightly reinforced columns at wall ends and junctions and beams at lintel, plinth and roof level - brace the building and tremendously improve the seismic performance of structure.

**DrEngr-Naveed Ahmad Mayar:** Fahad Khan Hoti the word "plinth" in the last comment should be read as "sill".

## 22. What's a gully trap, p trap, floor trap and grease trap. Where should they be installed?

**Shahab Khan:** Gully traps are constructed outside the building to carry waste water discharge from washbasin, sinks, bathroom etc. and are connected to the nearest building drain/sewer so that foul gases from sewer do not come to the house. It also prevents the entry of cockroach and other insects from sewer line to waste pipes carrying waste water.

**Shahab Khan:** P trap also prevents entry of foul gases to the house and is installed under WC. The Porta W.C has a built in P trap

**Shahab Khan:** Floor trap is also called as Jali to collect waste water of Wash Basin etc.

**Fahad Khan Hoti:** Floor trap collects waste water of floor from showers

**Nauman Janjua:** a grease trap is more or less a gully trap that catches oil/ grease particles coming from sink of the kitchen when oily utensils are washed.

## 23. Water Seepage Solutions

What is the solution to water seepage in walls (saym)? Some of the walls in my house are damp and the paint is coming off. There seems to be some water leakage somewhere. Is there any way to stop this happening, other than breaking the wall / plaster?

### Comments:

**Fazli Imran:** Vertical dpc. Half inch Plaster and hot bitumen coating on external or mosaic in 124. If basement then thick polythene sheet over bitumen coating and sandy backfill. If saym is coming from wash room then go and kill the plumber. ..

**Ali Iftikhar:** Zero chips on wall..

**Fahad Khan Hoti:** If its coming from washroom, call the plumbed and replace the pipe. Zero chips with puddlo is v good. Barrister Faisal Khan sb. U r talking about f11 office or f6 house? Faisal khan. First we need to find the source, then after wards, we can go for the treatment. There are various ways to go about treating rising damp, though most are designed to be preventative measures that should have been put in place BEFORE any moisture damage occurred, not afterward. These measures typically come in the form of various sealants or membranes. Water-resistant chemicals etc.

Faisal Khan Thank you for the helpful advice. It is our F6 house. Probably related to plumber now that I think of it, coz the saym is on the external walls of the bathrooms

**Awais Raja:** Agreed with Fahad

## 24. Useful Tips for Economical Construction

If any body is planning to construct a house. We can share some useful tips for economical construction

**Muhammad Arshad Hameed:** I can give Quantity of material and material aggregates with Engineered Estimate.

## 25. Payment schedule in favor of contractor

S#	Item of Activity	%age Payable
1	Mobilization Advance	25
2	Excavation	3
3	Plinth Beam	4
4	Lintel Beam	10
5	Roof Level	5
6	Slab Pouring	6
7	Chawkat Fixing	2
8	Electrical Wiring	2
9	Sewerage Lines	2
10	Plastering (internal)	3
11	Plastering (external)	2
12	Water Supply Piping	2
14	Washroom Tile Fixing	3
15	Kacha Flooring	3
16	Washroom Utincils Fitting	3
17	Electrical Board etc Fixing	2
18	Kitchen Accessories Fitting	2
17	Wardrobe Fitting	4
20	Flooring with Tiles	5
19	Electrical Accessories Fitting	4
22	Paints/Rock Wall	4

21	Door Fixing	4
	Sub Total	100

**Ashar Ayub:** Unit Rate he acha ho ga. Is mein 21 Items hain

**Fahad Khan Hoti:** Actually one thing should be kept in mind that keep him below 40 percent on completion of grey str.

**Ashar Ayub:** grey...?

**Fahad Khan Hoti:** Without finishing

**Muhammad Arshad Hameed:** Fahad Khan Hoti Very good %age Division But Where are Windows , roof treatment, parapets, Boundary walls, Main gate, courtyard flooring?

**Fahad Khan Hoti:** Hameed sb. Windows are often installed by the supplier and other things are outside the covered area

**Muhammad Arshad Hameed:** Beyond covered area who will do these items and how a nontechnical client install windows, all fittings and fixtures are also installed by supplier as you mentioned in s.no.18

**Fahad Khan Hoti:** By kitchen accessories and bathroom accessories i meant towel rail, toilet paper holder, mirror, small towel rail, itensil holders etc. And fitting is an 8 piece set, which contains mixer, shower mixer, bib cocks etc. The extra items other than covered are mutually decided by owner and contractor

**Muhammad Arshad Hameed:** Respected Fahad Khan Hoti sb and where in consultant ?

## 26. Termite Protection

Any information about proper wood treatment for termite protection? Product? Application of it? How effective is it? This is if we go for wooden doors on GF. Islamabad has a lot of termite problem.

**Fazli Imran:** Steel chawkaat and aluminium windows...

Otherwise anti termites chemical is available in market with various trade names. Its application is usually at the lean under flooring

**Zehra Naqavi:** Yes steel frame has been in for quite some years now but what if client insists on wooden ones? I have talked to carpenters who say that termite proofing really is not as effective as it is claimed. It doesn't last too long. One mason advised to use 'luk' or bitumen at the base of a wooden chawkaat some 3 inches deep and covering all sides of the wood frame at base. Anyone tried that? Can anyone recommend some good termite proofing brands please?

**Fazli Imran:** <http://www.islamabad.ebizpk.com/termite-fumigation...> Creosoted wood for chawkaat is another solution but that becomes expensive and cumbersome job for small scale works

**Zehra Naqavi:** Thank you

**Fahad Khan Hoti:** There are two general categories of termite treatment, liquids and baits. Soil-applied liquid termiticides have been around for decades. Their purpose is to provide a long-lasting chemical

barrier that excludes termites in the ground from entering buildings. In most cases, termites in the structure die off as well, since they cannot return to the soil. Most former products were repellent rather than lethal to termites foraging in the soil. Newer materials, such as Premise® (imidacloprid), Termidor® (fipronil), and Phantom® (chlorfenapyr), are non-repellent and termites tunneling into the treatment zone are killed. Overall the non-repellent products are proving to be more reliable in their ability to resolve termite problems in the first attempt. All registered termiticides (both repellent and non-repellent) can be effective.

Termites are slow eaters (the average colony eats a pound of wood in 5 years), thus your dwelling won't collapse tomorrow. But it doesn't mean to sit down and relax. We need to find out, what kind of termite it is. Termites if the above mentioned methods don't suit you, you may want to use the following home remedies against these creepy crawlies: Essential oils. Clove bud oil is particularly effective in killing termites. Take a mist sprayer, put the oil into it and spray everything where you think they are living. If you want to prevent their appearance or reinfestation, use vetiver oil. Aloe. This remedy kills the bugs only on contact with aloe. Crush the entire plant into some container and pour enough water to cover the plant. Then, after several hours, strain the liquid and add 5 parts of water to 1 part of aloe into a mist sprayer. Spray it directly on the insects. Sodium chloride. Soak several cotton balls with an organic compound, sodium chloride and a cleaning agent. Then fill these balls in any plastic cover and place in all infested areas. This will kill the pests and stop their recurring.

**Faisal Rehman:** I would say to cut out the affected wood and some healthy portion near its vicinity and replace by best quality wood. Termites will find their way back by using its survival tactics and may start again even after treatment.

## 27. sq.ft to a covered area sq.ft

**Q.** What's the conversion factor of normal sq.ft to a covered area sq.ft? Like plaster rate is 8 rs per sq.ft but in terms of covered area it's 32 per sq.ft

**Hanif Gohar:** no conversion factor has been seen regarding this

**Fahad Khan Hoti:** U dint get me. Hanif sb. Like there are four wall and ceiling. Paint rate is rs. 6 to 8. But in terms of covered area, they give u 30 rate

**Hanif Gohar:** Fahad Khan Hoti sb its self created by contractors and could be adjusted and variable

**Fahad Khan Hoti:** Yeah i know, thats what i m talking. U got to tune ur self and be on same page with them

**Hanif Gohar:** we can drive this conversion by our self..... Add up all Sft area of a room including walls and roof and multiply with the rates like 6 to 8 per ft and make a cost. Now this cost may divide of room covered area you can get the results.

**Faisal Rehman:** Fahad, your comment: "Like plaster rate is 8 rs per sq.ft but in terms of covered area it's 32 per sq.ft". This might be the 4 sides of wall in a room under its cover area.

**Muhammad Arshad Hameed:** All agreements should be unit rate coverings all items of the project How it is possible Room A. 10X10 Room B. 20X05 Covered areas are A & B =100 Sft same But Circumference A =40 Rft Circumference B =50 Rft In room B walls are 10 rft extra Brick work extra plaster extra Paint Extra Labour of all works extra, How you justify in covered area rate ?

**Fahad Khan Hoti:** I m just asking a rough estimate at finger tips. errors and omissions accepted

**Muhammad Arshad Hameed:** Covered area cost for conventional houses depends upon location of site, types of Materials, method of construction, most important your plan and design

## 28. House Info

**Naveed Khan:** What was the need of barbed wire in islamabad

**Fahad Khan Hoti:** Naveed. Barbed wire is v necessary for islamabad. as its v insecure

**Syed Aziz Ahmad:** Fahad Khan Hoti how much plot size and how much cost.....

**Fahad Khan Hoti:** Yaar it was 600 yards. 8000 sq.ft. 950 grey str. And then finishinh item wise. 3 crores almost

**Syed Aziz Ahmad:** its cost almost 3700 per sq ft.....very costly.....

**Fahad Khan Hoti:** Actually spanish tiles, solid wooden doors and wardrobes and wooden false ceiling and i purchased maahagnee and ash wood which is 4000 pee ft. Face work, water tanks, ret walls, boundary and rcc parapet walls, outer yard flooring etc doent come on covers arw

**Ashar Ayub:** Very right fadu

**Fahad Khan Hoti:** It was 8500 to 8800 sq.ft but shades and other things made it to 9200 almost

**Ashar Ayub:** Total cost per sft???

**Fahad Khan Hoti:** One thing more grohe fittings u know an 8 piece set of sonex starts from 15000 to 60000 while hense and grohe starts from 1 lac. Porta wc is 15000 to 40000 while bosch starts from 50000. Similarly vanities and jaccuzees etc. Well it was around 2600. I have fitted 600 wc also and sanitary set of 3500 also

**Ashar Ayub:** Electrification labour???

**Fahad Khan Hoti:** I have fitted 600 wc also and sanitary set of 3500 also

**Ashar Ayub:** Furniture included?

**Fahad Khan Hoti:** Elect labour is rs 6 to 8 but in terms of covered area its 25. No furniture. But wooden flooring of sheesham and doors solid of mahagnee and ash. Sheesham (shawa) was his own. sheesham is v good but i needs to be lackored/polished once a year, it fades. U know guys i used karachi sand in its elevation but it changed its color.

## 29. Bearing Capacity Test Rates

Bearing capacity test rates and no of tests required.



**Faisal Rehman:** Engr. Fahad: No. of samples depends on area and type of construction. Direct Shear test will be required having rate of Rs. 2000/sample as per UETP. Number of samples for uniform plain strata is at least 1 after every 50ft. But if it is a single hall, then their might be requirement of two samples for cross check and confirmation. Complete list of other soil and highway lab conducted in UETP is attached in the group files which can be found in below link:

<https://www.facebook.com/groups/384121145118016/412007205662743/>

### 30. Boring rate for water in islamabad

1. Rs. 300 for 1st 200 ft and 350 for next. Total 60000
2. Jd pump missile 1 hp 10000
3. Electric cable pure copper rs. 20 per ft. Total 4000
4. Cable for holding the missile. 1000
5. Strainers per 10 ft = 100. Total 2000
6. Pvc casing for 200 ft = 10000
7. Misc. 500 for tape, covers etc
8. Total cost = 88000 with material for 200 ft boreTop of Form

### 31. Rate Analysis

#### Rate Analysis

8 French polishing on wood works complete in all respects

SR. NO	DESCRIPTION	UNIT	QTY	RATE	m <sup>2</sup>		REMARKS
					AMOUNT		
<b>DIRECT COST</b>							
<b>A</b>	<b>Material</b>			<b>Sub-Total</b>	<b>1,047</b>		
	Malmal Clothes	Thaan	0.16146	200.00	32	3 Thaans for 200 Sft	
	Golden Laakdana	Kg	0.10764	1,600.00	172	2 Kgs for 200 Sft	
	Giller	Gallon	0.16146	2,200.00	355	3 Gallon for 200 Sft	
	Lacker	Gallon	0.10764	2,300.00	248	2 Gallon for 200 Sft	
	Vexpolish	Kg	0.05382	1,000.00	54	1 Kgs for 200 Sft	
	Color	Packet	0.05	60.00	3	1 Packet for 200 Sft	
	Chakmitti (Potene)	Kg	0.16	40.00	6	3 Kgs for 200 Sft	
	Gillu	Kg	0.05	200.00	11	1 Kgs for 200 Sft	
	Raioginna	Packet	0.05	70.00	4	1 Packet for 200 Sft	
	Cellathalli	Packet	0.05	70.00	4	1 Packet for 200 Sft	
	Chatamium	Packet	0.05	70.00	4	1 Packet for 200 Sft	
	Zink	Packet	0.05	70.00	4	1 Packet for 200 Sft	
	Peela Phulla	Packet	0.05	70.00	4	1 Packet for 200 Sft	
	Sprit	Lit	1.08	70.00	75	20 Lit for 200 Sft	
	Thinner	Gallon	0.05	400.00	22	01 Gallon for 200 Sft	
	Waistages	%	0.05	997.28	50		
<b>B</b>	<b>Equipment</b>			<b>Sub-Total</b>	<b>10</b>		
	Misc Tools & Eqpt	LS	0.05	200.00	10		
				-	-		
				-	-		
<b>C</b>	<b>Labour</b>			<b>Sub-Total</b>	<b>1,035</b>		
	Manhours	Mhours	15.00	60.00	900		
	Area Factor		0.15	900.00	135		
					-		
	<b>Basic Rate</b>			<b>Rate/ m<sup>2</sup> (A+B+C)</b>	<b>2,092</b>		

Total Area is 12,500 Sqm.

**Fahad Khan Hoti:** 3 gallons for 200 sq.ft and 3 thaans seems a bit on higher side. Austerity measures have not been taken into consideration by the carpenter

**Ashar Ayub:** Fadu the Basic Rate is still on very High side. I wanna reduce it, coz the with material rate is about 170 ~ 200 at very fine work.

**Fahad Khan Hoti:** U r rite

## 32. Guidelines while Starting Construction

### 1. Important Points for Construction

1. Before starting a new construction project, check whether your area comes in a Earth Quake prone zone. While doing construction work safety measures should be taken for earth quake protection.
2. The whole area of the building should be constructed at one time to avoid settlement in any portion of the building.
3. If the construction is done in small portions, there may be chances of the settlement in foundation.
4. All components of the building should be tied up with R.C.C. Band at plinth level/DPC level, door lintel level and roof level.
5. The corners, T-joints and balcony should be designed keeping in view the safety.
6. Keep in mind the norms/rules of concerned area about building construction.
7. Know about the authorities whose sanction is required to start the construction work.
8. Know how much time it will take for getting the sanction.
9. Search for a qualified architect or designer.
10. Prepare house plan according to the area of the plot.
11. Arrange structural drawing according to the type of soil.
12. Know availability of the building materials, their quality and reputed material suppliers.
13. See the availability of good quality of water and availability of electric connection.
14. Access the labor/contractor for construction.
15. Have knowledge about high flood level and the level of surrounding buildings and roads

### 2. Works while Starting Construction

While starting the construction work by contractor at site after approval of the drawings and designs, the following works should be taken in mind

1. The site should be cleared if roots of the trees exist; they should be removed up to 2 feet below the ground level.
2. Layout of the building should be done with fixing centre lines and 'burjis' or brick pillars etc. and mark all the walls, columns on the ground with their proper length and width as per designs or drawings.
3. Plinth level/DPC level should be fixed keeping in view the H.F.L (High Flood Level) and surrounding buildings and nearby roads.
4. Excavation for foundation should be done according to the designs and exact width and depth of the wall should be dug. If extra depth is made due to any reasons or any soft places found, those should be filled in with coarse sand or concrete.
5. In case of excavation made through J.C.B. machine, the last layer should be done manually to avoid softening up to the base of foundation.
6. In case the water comes in trenches, it should be pumped out immediately and proper mechanism be designed by a professional

### 3. Concreting

1. After dressing the side and bottom of the trenches, the cement concrete, mechanically or hand mixed should be laid in trenches.
2. The concreting should be done in 6 inches layers and should fully be compacted with vibrator or hand rammer.

### 4. Brick Work

1. Brick works should be done according to drawings or designs in foundation.
2. The bricks should be of the 1st class quality and they should be soaked in clean water.
3. The joints of brick works should be filled up with mortar completely.

## 33. RC jacketing



I found an excellent document on this:

[http://www.academia.edu/5417992/Retrofitting\\_of\\_Existing\\_RCC\\_Buildings\\_by\\_Method\\_of\\_Jacketing\\_MLMCE\\_1\\_Civil\\_Engineering](http://www.academia.edu/5417992/Retrofitting_of_Existing_RCC_Buildings_by_Method_of_Jacketing_MLMCE_1_Civil_Engineering)

## 34. Water Seepage Problem during rainy season

**Q.** During monsoon water seeps into bedroom at the window level. How do You stop it ?

Generally windows are fixed in the wall after the masonry work is complete. While doing so, a gap is bound to exist between the window frames and masonry. This gap may widen with time, creating all sorts of leakage problems. After a detailed inspection, apply Silicone Sealant in these gaps. This Silicone Sealant is highly flexible which accommodates any movements caused by thermal expansion & contraction and is UV resistant.

**Fahad Khan Hoti:** These things need to be addressed before construction. After construction, you need to root out the cause 1st, otherwise stopping or training the seepage somewhere else won't do the

needful. Solution varies from cement plastering mixed with water proofing agents like puddlo, chemicals, bitoflex to water proof paints, sealants and many more

During plastering the sills and jambs of windows slope should be given towards outer side. If gap is there that must be closed with silicon or any other sealants.

If you treated like this there is no chance to penetration of water into room. Also projections must provided on doors and windows.

## 35. What Constitutes A Good Home Inspection?

Obviously the most important component of a good home inspection is a good home inspector. In the early days there were few standards for training or proficiency and almost anyone could buy a flashlight, a ladder, and print up business cards. In some areas this is still sort of true but the industry as a whole has become pretty professional.

There is no society in pakistan to help you in this regard. However american Society of Home Inspectors, founded in 1976 has established standards for home inspections and home inspectors; provides training, and attempts to keep its members informed of changes in state regulations and innovations in equipment and construction standards. Membership in the Society should be one criterion to research when hiring an inspector.

According to the Society, a home inspection is a visual assessment of a home's structure and systems. In some cases, in practice at least, an inspection should extend beyond the visual to the operational, but an inspection should look at the following which is based in part on ASHI Standards of Practice and in part on experience with dozens of inspectors in several states. For an excellent description of what ASHI Standards specify that inspectors do or not need to do, take its visual tour at [www.ashi.org](http://www.ashi.org). Our suggestions that go beyond these Standards of Practice might be used as a guide when interviewing a potential inspector.

### 1. The Structure

An inspector will inspect entry ways, foundations, siding and porches looking for such symptoms of trouble as sagging roof lines, gaps in or damage to the siding, porches pulling away from the building, obvious signs of rot or insect damage (although this is not a substitute for a pest inspection) settlement, certain types of cracks in foundations. Inspectors will usually probe the cill or rim (the wooden support that sits on the foundation and into which the framing is fastened) and framing where it is exposed, to test for soft or hollow spots caused by rot or pests.

### 2. The Exterior

An exterior inspection will include a visual assessment of decks, balconies, eaves, soffits and fascias. An inspector will look at the grading of the land around the house for obvious drainage problems, and check walkways and driveways for apparent deterioration or safety concerns. He will also visually inspect vegetation surrounding the house for obvious problems such as the intrusion of roots near the foundation or buried utilities or overgrowth that might promote excess humidity or contribute to security issues. Electric garage door openers should be checked to confirm they are in compliance with current safety standards.

The exterior inspection is not expected to include outbuildings or fences, or any evaluation of hydraulic or geologic conditions.

### 3. Roofing Inspection

Some inspectors will get up on any roof, some will tackle low slopes, and others rely on binoculars to check portions of the roof visible from the ground or will inspect lower parts of roofs from upper floor windows. The age of a roof might be as good an indicator of its condition as an actual visual check and a good inspector can usually estimate the real life of a 20 or 25 year roof in a given climate or on a particular type of construction. Where safely possible, an inspector should also report on roof drainage systems, flashings, skylights, chimneys, and roof penetrations (for vents and flues).

### 4. Plumbing Inspection

An inspection should consist of testing the interior water supply and distribution system including water pressure, water heating equipment (estimating age and approximate time to replacement) and the appropriateness of vents, flues, and chimneys. Most inspectors will flush toilets to check for leaks and run all faucets to assess water pressure and the immediacy and volume of available hot water.

### 5. Electrical System Inspection

The inspector should check for over current protections, grounding, and the presence of any aluminum wiring (a serious fire hazard and banned for many years in most states). Most inspectors remove the face of the electrical box if it is safe to do so. The inspector should also check a representative number of switches and outlets in the house and note the adequacy of smoke detectors if the state does not require a separate inspection by the local fire department before the deed transfers.

### 6. Heating and Air Conditioning Systems

No matter the time of year the furnace should be tested by turning up the thermostat and checking the response. Air conditioning cannot be checked if the ambient outdoor temperature is below a certain point. If the energy source is oil an inspector will check the condition of the tank and any visible lines running from the tank to the furnace. Some inspectors will run an efficiency check on the furnace for an additional charge.

### 7. Home Interior

An inspection should include a visual scan of floors, walls and ceilings for signs of water intrusion, or sagging. Stairways and railings will be checked for safety and code compliance and a sample of windows and doors inspected for condition and ease of operation. ASCI suggests that inspectors look at countertops and a representative number of the kitchen cabinet interiors and drawers for condition and integrity. The basement should be checked for indications of previous water intrusion in addition to signs of structural problems.

### 8. Ventilation

Poor ventilation can lead to rot, mold, poor air quality or excessive energy consumption. An inspector should check insulation and vapor barriers in unfinished areas of the attic and in the foundation area and look for the presence and operation of any mechanical ventilation systems in the attic and other high humidity areas such as kitchens and bath.

### 9. Appliances

An inspector will usually run a dishwasher through a full cycle and will check stove burners and oven to make sure each is operating properly. If other appliances such as washer, dryer, or microwave are to be included in the purchase these will also be checked to make sure they are at least in operating condition.

### 10. Fireplaces

Fireplaces, particularly in older homes, are a frequent source of problems. Inspectors should check for the integrity of the flue, proper draft, any blockages in the chimney (even a birds nest can be a major problem), and will visually inspect, as much as possible, the exterior of the chimney for damage to bricks, pointing, and flashing.

### 11. Comments:

**Shahab Khan:** Well Done Fahad for the input you have put in.

**Fahad Khan Hoti:** Thanks Shahab Khan. Glad that u liked it

**Adnan Mohmand:** Large asane khabare kwa