Hollow Block Construction in the Philippines

More than 50 Mistakes that can be made - and the Solution for those

In Philippines Construction probably 99% of all residential- and commercial buildings are made with hollow blocks. You only need sand and gravel from the nearest river, cement from the nearest factory and steel bars from the nearest hardware store. Ample available and thus the obvious choice to use for building.

First they form the columns (posts) by pouring concrete (sand + cement + gravel + water) between forms (mostly made out of plywood) where steel bars (reinforcement or 'rebar') are placed. When the concrete is dry enough, the forms are removed and what is left are 'steel-reinforced' concrete columns that can carry the next floors and the roof.
Note that the walls do not carry anything but their own (heavy) weight.

Between the columns they build up the walls out of hollow bricks by simply stacking- and gluing them together with mortar (sand + cement + water) and again reinforce with steel bars.
Note that the walls do not carry the next floor or the roof! The columns do that.

Building with hollow blocks is still the most affordable way of construction here and since they use it also for 20-storey buildings it have to be a good option obviously...but make sure that not only the contractor is experienced; **the construction-workers are the one who do the work and that's where most problems occur.**

Most hollow blocks are made literally in someone's backyard as a family business where they have a few wooden forms in which they pour concrete to dry in the sun.
They should use a certain minimum amount of cement (expensive) to make a strong hollow block...
Then why is it that when you drop a hollow block on the floor it breaks in many pieces?
Are they using enough cement?
We have ways to make sure the hollow blocks are of better quality.

Hollow block walls have steel reinforcement bars inside; but the wall is still 'as strong as the weakest link', which is the hollow block, which is mostly 300 Pound per Square Inch.
So make sure the blocks are of good quality.
Any hollow block wall is 'victim of its own weight'; outside walls have to be 6 inch thick (according to the Philippine Building Code) often resulting in cracks at the window-corners when the workers do not exactly know how to avoid this.
The cracks let raining-water through that might even reach the steel bars in the wall and that means Rust.
The wall can maybe resist pressure but not uneven tension which occurs because of the high total weight plus weak hollow blocks between strong reinforced steel concrete.

Philippine Plastering or Rendering

Look around you here at the buildings; mostly the outside walls have cracks in the plaster; it almost seems normal.
Walls that are made with hollow blocks have to be covered with a separate layer of a cement-sand mix (rendering or plaster) without steel bar reinforcement; it easily peels of or cracks when not enough cement is used. The cracks let raining-water through that might even reach the steel bars in the wall and that means Rust.

But even if they use the correct amount of cement, there are more problems that are not easy to control when the construction-crew is not educated; rapid evaporation, uneven shrinkage and lack of knowledge are only a few of those.
Rapid Evaporation: when the water from the concrete-mix evaporates too fast during the process of setting (hardening), it results in uneven shrinkage which gives cracks.
So the workers have to keep the complete wall surface wet to avoid quick evaporation BUT that's a lot of work...
The thicker the layer of plaster, the bigger the difference in evaporation (the outside part of the plaster loses water first) and the more chance of developing cracks.

Labor is relatively cheap here which is maybe the reason why not many Philippine contractors focus on improving construction technologies.

Plaster is labor-intensive and time-consuming, even redundant and unnecessary when you see the next technologies; you don't need hollow blocks nor plaster.

But for those who still prefer the hollow blocks; we identified more than 50 mistakes (and the solution for those-) that can be made. For example the mistake that workers add water to a concrete-mix that became dry while they have their lunch...not knowing that the chemicals in concrete have done their work and adding water doesn't change anything; it has lost its strength.
Our skilled workers are educated to avoid all the above mentioned problems by means of new insights in structural engineering plus we have the latest plaster-additives available to avoid cracks.

Two Alternative Philippine Construction Methods:

1) Panels of Light-Weight Concrete; Insulating
Cost: same or little higher than hollow blocks but Insulated (K-factor 0.2); keeps heat/noise outside, providing comfort and saving on air-condition bills.
No plaster = No cracks. Two times faster built. Walls hard as granite. Smooth flat surface.
The weight is only 25% of regular concrete; meaning the foundation does not have to carry so much weight and column-size can be reduced.
This light-weight building is perfect for steep hills or when there are soil- or foundation problems.
(Many American companies are using it to build their projects like call center in Cebu/Manila).
We do not sell the panels; we design/build as a complete service since skilled-experienced labor is necessary. ***http://www.sibonga.com/philippines_concrete.htm***

2) Solid Concrete Walls
Cost: same or little higher than hollow blocks but 10X stronger walls (3,000 PSI).
Typhoon and Earthquake resistant.
No plaster = No cracks. Two times faster built.
Columns and walls integrated as one system; walls also carry the next floor(s) and roof.
Weight is distributed evenly over the ground-floor unlike hollow-block-construction where the column-footing put pressure on a small space.
Ongoing research shows that walls can be made even thinner which will soon make this method (much-) cheaper than hollow block construction.
This 'reduced-weight' building system is also perfect for steep hills or when there are soil- or foundation problems.
The whole idea behind this is that most hollow-block buildings in the Philippines are at each point very massive and heavy while that is not always necessary; look at an egg-shell, it is very strong but very thin...
We are the only contractor who offers this method in the Philippines; in the USA they use it for many years already in projects like the Trump Tower etc.
http://www.sibonga.com/cement_hollow_blocks_philippines.htm