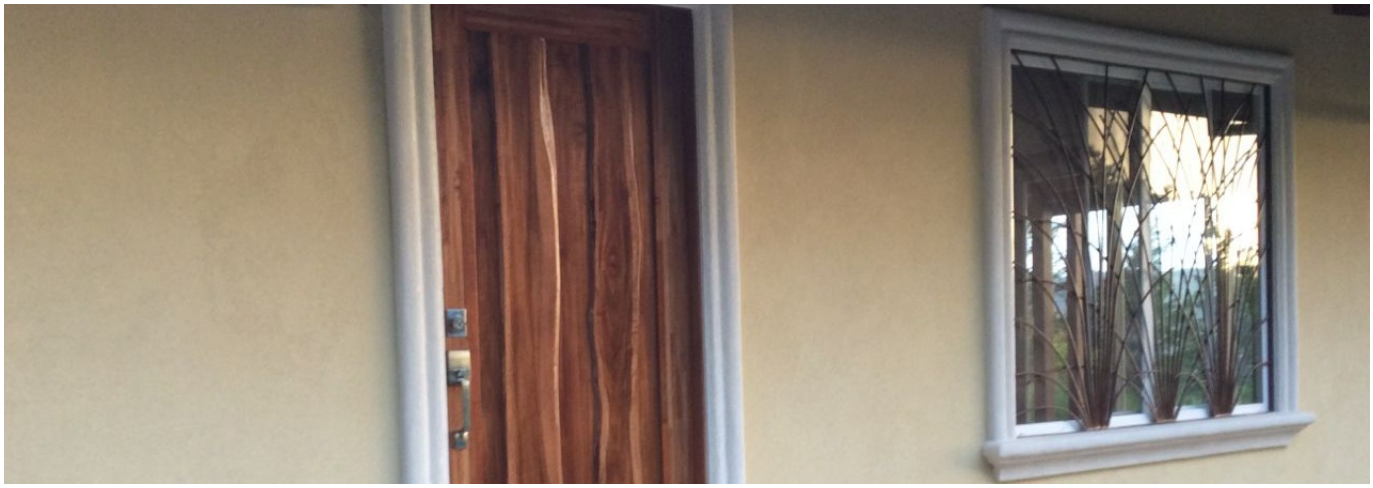
Techos Siglo XXI – Constructing Your Green Home

Homes for the 21st Century – Materials, Methods and Designs. Siglo 21 Metodas, Materiales y Diseños.



Home Diary – Playa Grande

April 7th, 2015

Super Home #3 begins with a BIG MOVE!

Journey Begins with our crew's 5 hour trip from Platanillo in the south way up to the Playa Grande, Guanacaste Province.

This story brings about a sizable change in location as well as home design and environment. Playa Grande is a well known Guanacaste beach just north of Tamarindo and south of the ever famous Flamingo Beach. This location is also well known for being a major egg laying beach of the Leatherback Turtles. A beachfront that has not seen a new building permit in over five years due to the pressure from environmentalists and government agencies that don't want to see light pollution contaminating this important laying ground. Those that have built glass fronted homes on a turtle beach defies all environmental logic or responsibility hence I don't blame the municipality to in essence freeze out further development.

With that said other off beach development has and continues to move forward as is exemplified by our clients Ian and Corynne Bean who own a local successful surf shop, Frijoles Locos. (Crazy Beans so go figure how that name came about.) Ian comes here from Florida but Corynne took a slightly longer route

ending up in this location from Australia. Our relationship came about as a result of this website of course when Corynne was looking for a better building solution. Two things spurred this, first their living through the 2012 Guanacaste earthquake that literally shook up their current building that houses both their business and two apartments. This lead her to be less than fond of the concrete concept when the ground is shaking like hell. Also common deficiencies in their business building that they also built a number of years ago shall we say fine tuned as to what they were looking for and what they were not anxious to repeat. Hence the inevitable collision with SIPs and light weight building solutions.

This location has us up at a lofty elevation of 26 meters (86 feet) over the popular Playa Grande surf. So quite a change from Larry and Cindy's 335 meter (1,105ft) mountain location along with its ever constant cooling ocean breezes. With that said we are also not buried in the heavy jungle of Uvita, the site of home #1, that blocked all cooling breezes. This is the typical dry forest of the Guanacaste so it is much more wide open with daily breezes up to strong winds blowing through the construction site. This home is a totally different style being what they call Tropical Contemporary. One common thread though is that this home is designed to function without Air Conditioning with a high ceiling that will be venting out its rising heat via a transom that fills in the space between the two sloping roofs which make up a common approach to contemporary design. This will also be employing the raised floor design sitting on bored pilings located at the foot of what is a steeply sloped lot of 5,500 m2 or 1.4 acres. This lot has a 1.8 meter or six foot drop over what is the building site hence we have cut into the hillside about half of this drop and raised the front of the home with the fill taken from the upper area of the footprint. This will actually be incorporated into 2 terraces to eliminate the appearance of sticking up over the site versus dropping into and blending into its natural location further camouflaged with lots of gardening and green spaces. This home will also incorporate a lot of wood in it with laminated Teak rafters and Teak roof decking and a laminated Melina carport and storage area which will be a well disguised 20′ container converted to its second life usage. The same glu-laminated Melina floor structure as well as panel connectors will carry through as in our other projects. So in essence some new twists added to our standard procedures.

WHAT IS LIGHT WEIGHT?

This home is of course very light weight and due to a bit of insanity provided by a structural engineer gone mad I took the time to demonstrate to readers exactly what light weight means as in of itself that is a rather nebulous description. I took this home and calculated the weight of a concrete floor and walls of this dimension and calculated how much concrete it would take and what that would in turn weight in at. A mere 109,000 kgs versus this elevated floor and SIP wall construction will weight in at 7,500 kgs, in essence a **14 to one difference.** This brings about a huge difference in supporting structure as well as more than a slight difference in how each would behave in an earthquake. Do take note one of the great motivating factors for these owners to order one of our first homes and patiently wait for us to get to them was this simple fact. They lived here through the Sept. 2012 Guanacaste earthquake hence it tempered their desire to ever experience such again in a huge heavy weight monster that just does not dance well when the ground is a dancin.

Truck arrives and unloads materials and tools from down south to this Guanacaste location.

This is the pallet we start with to paint a picture of our next super home.

Cutting of batter boards and stakes to set up building and excavation lines.

Batter boards are set up to establish the exact location of the new home after debate and option selections with the owners Ian and Corynne.

Small tress are downed and pulled out of construction zone with the backhoe. White line in the foreground marks out the carefully selected septic field.

THE FIRST CUT! There is always something special about seeing the first shovel of dirt move that initiates that birth process of a new home. Note the white lines laid out so excellent operator Javier knows where and what to cut. This may seem to be a simple act however it came about after a debate that stretched out over all of this year as we debated and counseled the owners to help them make the best possible decisions in order to deliver their dream home or transfer their postcard in the mind to the home in reality. The end of this debate only came about the day prior to this shovel hitting the ground as a result of them seeing the layout lines to be able to better envision how this home would marry up with its natural surroundings. This is no small step as these decisions on site work and placement are something that can never be changed or corrected when not done wisely thoroughly and judiciously.

The reminds me of a perfect example of one of the worst situations I have encountered in my 14 years here when I was called in to inspect a $549,000 home already under construction with the roof structure going up. This was an absolute nightmare brought on by blatant professional incompetency and most certainly a lacking of debate and counsel with the owners. This case I wrote about in one of our private newsletters of 13 pages describing this disaster in detail. At any rate by the time I arrived on the scene the only tool needed to fix a home totally dysfunctional within its natural surroundings was a small tool called a Caterpillar. Bulldoze it and start over again was really the only solution yet they nor anyone else is going to swallow that bitter pill. Instead they ended up with a retarded home built by fools with unique features like a glass walled master bathroom facing the neighbor's driveway not 6 feet away while facing the mountains versus having been flipped on the lot where it would have been 14 feet above the drop off of the ridge looking out from 1000 feet above a panoramic view of the Pacific. How did this gross blunder get by the combined brain pool of the developer, the builder, the engineer and the owner only God knows, the sheer stupidity still amazes me as to how none of them saw the train coming.

Certainly proved that declaring one is a professional does not make it so when the rubber actually meets the pavement.

Removing the natural sloping hillside to create a flat spot for a carport pad.

The homes platform is made ready by cutting into the high side and moving the fill down to the low side which was a 6 foot drop prior to our massaging efforts.

Layout and squaring up the the building lines using age old methods and basic geometry.

Hole dug into the site to make a space for the required 5,000 liter (1,250 gal) water reserve tank that is a requirement of the project. This was tough digging as this hill side has a layer of rock 1 – 4 feet under it that behaves a bit like shale or highly compressed gravel fines. Auger would not dig through it and no filtration existed as water left in these verrrrry dry holes remained there for over a day. A bit of a pain to dig and drill into but provides great support to hold up any house let alone a featherweight such as this one is. Next comes the digging of the hole to house the dual septic tanks.

Very full Truck from San Jose arrives the next day bringing with it water tank, septic systems, misc. materials and the plastic roofing for the home and carport.

Tanks unloaded awaiting placement

Lines laid out for tank hole as well as feeder tube going down to septic field.

Backhoe starts the septic tank hole.

Field lines assembled dry to establish all the trenches required for the system. This is strategically located in front of the house on a relatively flat area to accommodate the perfectly level weeping system used with our custom made pipes. This will also ensure that when we revisit this site next dry season the front area of the house will stay a perpetual green due to the leaching of the field providing a source of water for plantings to flourish even throughout dry season. Needless to say a necessary trick to provide a perpetual green space in the very dry Guanacaste summers.

Laying out chalk lines for operator to follow for the septic field drain lines.

Main septic settling tank (the higher one) is placed along with the biodigester FAFA as the working partners to this system.

Concrete cap is poured over fiberglass to ensure a durable top.

Concrete cap poured over the main settling tank.

Looking into bio-digester you see that it has been filled with washed crushed rock to create a homey environment for billions of bacteria that will go to work quietly breaking down the human wastes prior to sending the overflow out into the field.

Water tank is placed in hole under the house to hide it away from site.

Piling forms are built around the tank to support the floor structure while going down below the base of the tank.

Sidewalk poured at the high side of the house now ready to receive a small retaining wall to keep the hillside in place and direct the water from the hillside away from the house and of course to avoid water entering into the house's footprint. First row of pilings supporting the future deck also poured.

Sidwalk in front of deck formed and ready for another day's pour.

So what do you do after a hard day of baking under the Guanacaste sun pouring concrete. Why you go to Chalrie's bar for a few beers, play pool and sing Karaoke as we see Josue performing for the locals. Angel, Delvin and Amilkar prefer to be the strong silent types that look on and cheer but are wise enough not to sing.

This is the sewer pipe that we use a SDR17 rated pipe that is at least double the thickness of the typical sanitary grade pipe that is typically used which is delicate when new and 5 years later it is like plumbing with crystal when problems arrive on the scene.

Even more important the fittings used are schedule 40. Do take note it is almost always the fittings that come back to haunt home owner's when the crack up and leak like crazy. Note you never find elbows on our job sites everything is run through 45 deg turns or Y's as you see here so as to maintain the speed of flow of the sewage hence not allowing solids to settle out leaving the owner up to their elbows in crap!!!

The main line from the house heading into the septic tank being put in at the optimal 2% slope which again ensures ideal speed of sewage flow.

The final arm of the drainage field installed with crushed rock surrounding the tube at roughly a foot deep and then covered by geo textile to prevent fines from filtering down through the rock filter into the critical weeping tubes.

Looking down the main distribution tube prior to filling in with dirt to create the green area. Note how the trench gets deeper and deeper as it heads down to the higher area of the lot.

Take note this is the first arm of the field and the very end of it is almost out of the ground due to the slope of this whole drainage area. Now since the field piping must be perfectly level to ensure that the water seeps out uniformly over the entire area hence making certain no area is flooded and being

overworked. Here we moved fill in to actually raise this whole area of the lot while covering up the field and leveling the lot out more in this critical green area along with quiet waste dispersal.

Cutting up forming material to create the slab for the carport area.

Block retention wall going up on top of the sidewalk.

Pilings are all ready to go for pouring with the steel cage installed and 3/8″ threaded rod welded to cage to hold down the floor structure and tie all the pilings together. AS you can read this is one of the deeper ones going down 2.3 meters through the fill area and down into the rock field to lend us solid support.

Floating the carport pad after the truck has placed it at 2 pm to avoid the hottest part of the day as well as under tarp as direct sun on concrete is bad news.

Truck has now moved on to fill up the pilings bores. We never mix our own concrete for larger pours when their is redi-mix available. This truck only had to travel 20 kms to get to us. This batch had both a fluidity additive and an anti filtration one added to it to prevent rainy season weeping as well as zero water was added on site so as to ensure the formula stayed true.

While taking a late breakfast one morning a met one of the neighbors who was quite insistent in sharing french toast with me right in from the the surf break.

What you see here is a unicorn operated by Angel. A power trowel is not a common site here in the beach areas but fortunately as compared to down south we only had an hour drive to go locate one. MY guys had never used power trowels until this last year and had always done this work by hand. Both brutal as well as providing second rate results in any area over a couple of square meters. We were able to walk away from this floor by 7 pm after having to explain to the God that owns the development as to why we were working after 5 pm. The concept of the concrete Gods not waiting for morning seemed to be a bit perplexing to him.

Cleaning out the last of the concrete from the truck to place into pilings.

Three feet above the house footprint or in essence at the drip line of the roof we have installed a small retaining wall where we are now putting in place a concrete gutter so as to direct water away from the house

A close up of the concrete gutters but take note of the black plastic sticking out from below the gutter. This is here to prevent water filtration coming through the wall

during rainy season which inevitably leads to many more molds and likens growing on all concrete surfaces. More importantly this saturation over time causes most stuccos to crack and drop off. With this being a small wall only 65 cm high or 26″ not much is required to stop the inevitable filtration of ground waters hence black plastic is fast and cheap to do to avoid the future problems.

Gutter now installed and formed into the concrete beam that heads off this mini retaining wall.

This is exactly why this is done and even though it is bone dry these days this hill side will change drastically in the next month so when those rains do come we most

certainly don’t want the often daily thousands of gallons of water washing down the hillside and under the home. Hence this gutter is there to redirect that water flow around the home to both the west and east side of the home. This is so imperative yet often forgotten in the construction process to deal with the gifts from mother nature that will indeed come.

9 feet in front of the house we have cut a trench down to virgin soil for the beam and bored pilings that will sustain this retention wall of 4 1/2 ft or 1.4 m. This new level

will provide the sidewalk access to the front door step and a garden area that is now lifted up to the same level as the base under the house structure.

Rebar cages that will go into the pilings.

Boring the piling holes is not easy into this lower level of rock that is under the whole building site. IN fact without water and a bar it is pretty much impossible. However

with that said it also makes for a great base to support any load.

Making the cages that will go into the support beams that carry the weight to each piling.

View down the piling hole once cage is installed along with forms. Ready to pour.

Main stretch of beam is poured.

Next day the block starts to go up.

Last of beam poured as block proceeds.

Block is all up along with the slope down to the entry of the home and driveway.

The cages extend up from the piling to create a column in the wall itself and tying all into an upper beam.

Starting to form up for the beam and column pour and filling of all the block in at the same time. Everything is vibrated as it is poured otherwise you end up with large air pockets hence not very strong support.

Backhoe is brought back in to change the front yard of the home to a level area eliminating the natural slope of the hillside.

Really tough maneuvering in this tight space with a backhoe hence a little hard on the remaining trees so we have patched up the inevitable scars that come about from tight spots like this.

Okay platform ready for the eventual front yard and access to carport and storage. Now the retaining wall and gutter has to be extended to avoid the upper hill from flooding this area every time it rains.

Now to make a driveway with this fine gravel we got but ti does make an excellent base with great drainage after the back hoe breaks it up and packs it in place.

Now with crushed rock laid down over that we have a clean driveway not affected by rain.

Stripping the forms from the completed wall.

The front view awaiting curing and a stone face.

View from the entrance.

Here we extended the small retaining wall from behind the house across the front yard up to the container.

Also a permanent foundation is added to support the container as it metamorphasizes into a storage shed in front of the carport. Here we had to become building movers and lift the container out of the way so we had enough room to make the beam that will be supporting it.

We have formed up the supporting beam and used our bamboo poles to keep the container in perfect alignment with the surrounding walls.

This took a bit of strategizing hence this spot had to be left out so we had a location to jack from once the walls were cured enough to put the weight of the container and contents back down on it in its permanent position.

The retaining wall is now stuccoed to match the rest of the walls.

The gutter has now been poured in to become part of the wall so that all the water that is going to come down this hillside of roughly 1,200 m2 will get diverted to the side of

the lot and not flood the building site.

WE have manicured the hill side to have the water drain off into the gutter and Ian and Corynne have already started the plantings to turn this into a little oasis.

Here the crew is pushing the container by hand to get it into its exact final resting place now that the walls are sufficiently cured for us to put the weight down on them. Its been one verrrry long time since I did any building moving!

There you go the final inch and a half brings this big boy home to its proper resting place.

CHANGE OF PHASE…

Foundation work is pretty much done and the first truck of wood arrives from the sawmill down south.

There you go the butt end of a pile of flu-lam beams to make up the floor in structural grade Melina as well as the 2 x 4's that will support on the SIP panels. Also included are the Teak rafters as you will note by the much darker color.

First day the first sec ion of floor that will support the screened in deck is in place.

Second section as it starts to come together before being lifted up onto the pilings.

As per my instructions the mill does minimal planing of the joists so that as much wood as possible stays in the floor structure and not in the shavings pile at the mill. Here you note a full 2″ thickness of all joists.

Here is part of our recycling program where we put dead tire tubes to work in protecting our wood from the constant moisture leaching of concrete. Wood and concrete do not play well together so we always keep them separated to prevent that transfer of moisture or wicking as it is referred.

Our deadly straight four ply beam that goes below the wall of the house as it transitions into the screened in deck.

The whole floor system is quickly coming to life. Note the clamps and bolts that hold these built up beams together that are all glued as well to make certain they behave as one solid piece.

The floor is now complete awaiting sub-floor and decking. Note the oiled joists in the fore ground is the deck hence these needed to be stained to match the eventual Teak decking. As you will see from the no longer white Melina that we have added two layers of preservatives to the wood to stop mold growth, insects as well as to just stop the glu-lams from drying out excessively in the beach heat.

These are the two products used to ensure the wood maintains its ideal condition preventing excessive dryness as well as to ward of attacks by bugs however Melina has proven to be extremely undesirable hence not attacked. At any rate best to be certain by taking all precautions.

While the floor structure was in process another part of the crew was busy making the architectural wood pretty meaning filling any imperfections, sanding, oiling then polyurethane to be added to all these rafters.

A small error in the sawmill order meant that the main beam of the carport came in two 2 x 10’s rather than one 4 x 10 so here we are gluing these two together as well as stretching them out another meter longer to support the eaves of the carport as well.

Another error caught well in advance. The original outside architect made a blunder on the roof structure which had a big piece of master deck roof without anywhere near enough support. Here we are laminated some 2 x 6 Teak to make up the post and beam that had been left out. Here you see the strong contrast in colors of natural Teak and the Melina 2 x 4 panel connectors being temporarily put to use as strong backs.

That container look is rapidly loosing out as we sheet it in to make what will be the very tough storage shed and carport roof structure. This roof is designed to coordinate with the same style of the roof on the house. You can see here where I have built a support beam out of SIP panels to extend the support out 2 feet on each side of the shed for the extended eaves to provide rain protection. Also note in the foreground the first rafters nearing completion of their furniture finish.

With the addition of the back roof and fully sheeting in the container has all but disappeared leaving behind the new storage shed.

The end view one sees coming in now.

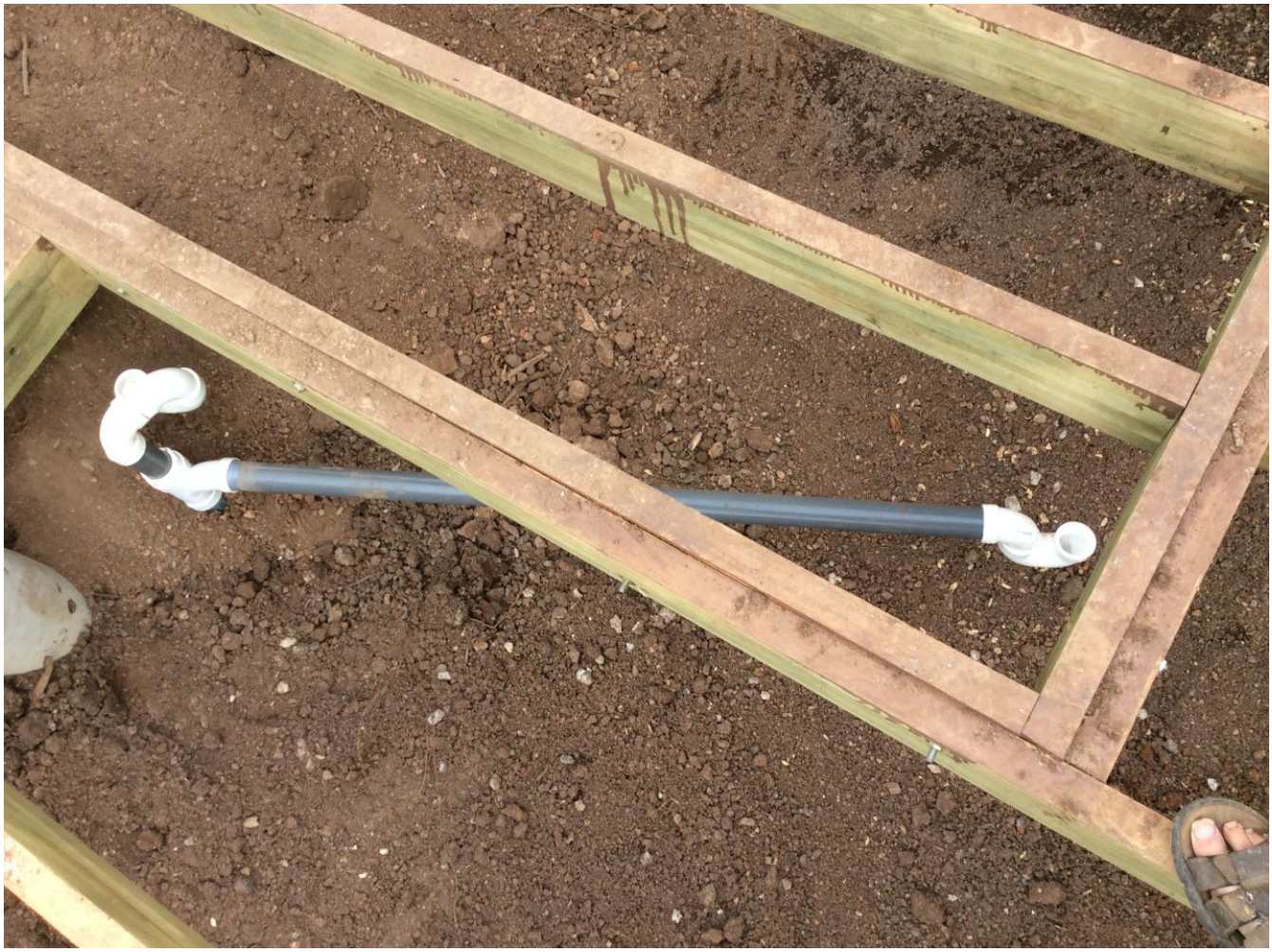
The roof is near to complete. This is our first PVC laminated roofing we have used, the product is from Japan and has been used extensively in the Central Valley over the past six years especially in commercial buildings. White is the only stocked color but red and green are available by special order. The product is very tough and due to its color and lamination it is a pretty good insulator which is very critical in this location. Not to mention it will not rust which is highly critical we are less than 2 kms to the beach. Comes in very large sheets so that reduces the number of joints as well. In this case it cost for this house about $1,000 more than tin but I would call that an incredible bargain especially when it is raining hard and they won't have the constant drumming in the ears to tolerate. Also makes for a massively cooler roof than any metal could ever hope to be. Also workers can actually walk on the roof without it caving in under them which is a serious consideration as it is always only a matter of time before someone is up there to service something.

This is what the laminations of this product look like with the polymer carbon fiber core sandwiched between two layers of UPVC.

To the left you see the large beam we laminated up to support the front of the carport roof. Beside that is all the Teak rafters that are near to completion.

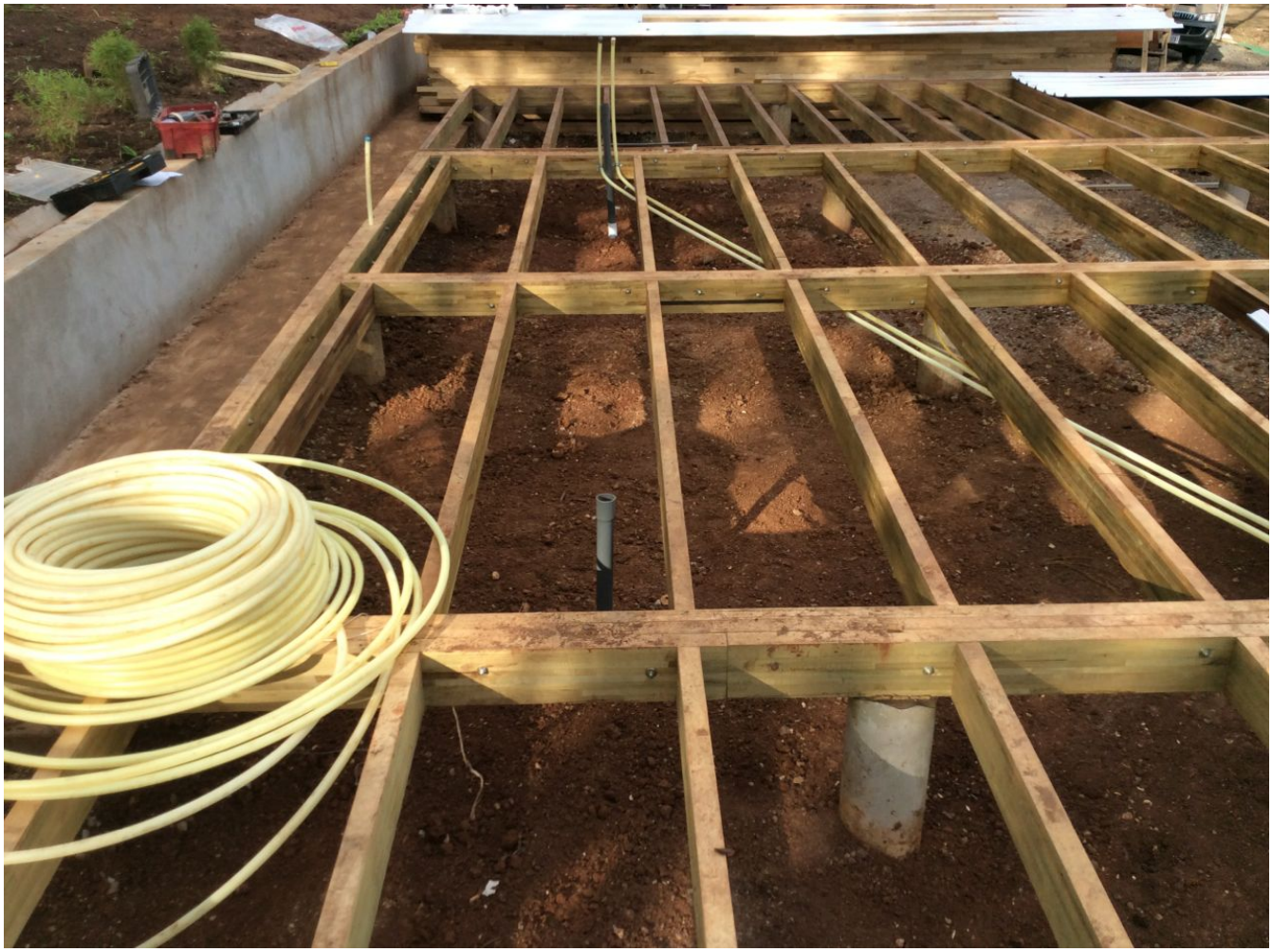
First coat of stucco is started on the storage shed and here we see the heavy fiberglass mesh being embedded into the stucco to make it behave as one solid membrane protecting the building from rain. Later on this will have an acrylic stucco put on top of it as the final color coat.

View from the carport of completed wall which is 8mm MgO board riveted to the old container.



Getting the above ground sewer lines installed here you see the shower and tub drains and their respective P traps.

Toilet line with take note a clean-out there if and when needed.



PEX water lines are now being added under the floor joists while it is easier prior to the sub-floor going down.

Three truck loads of fill was brought in to bring the yard up to final grade.

This is the final view from the street so everything is ready for rain and building the walls.

Fill put into the retaining wall area now makes for much easier work around the site.

One last large old Melina tree has been dead for a good 3 to 4 years based on the dryness of the wood. Needed to get this out of here before it decides to fall down on the new home.

Down she goes now to clean up before the backhoe moves on.

Pretty hefty stump to get pulled down the hillside where I made an interesting discovery.

This is a termite nest not more than 40 feet from the dead Melina.

So here we have bone dry wood a short stroll for the termites yet not a one in the Melina.

THE BUGS HAVE SPOKEN!!

Higher up this part of the trunk also shows a similarly unaffected by insects character in this nice dry Melina wood. What more evidence could we have than this to prove that bugs do not especially like eating Melina. Anyone else's opinion is of little relevance when we see empirical proof like this showing what this formidable enemy has to to say on the subject.

If you have been following along on this build you may well have noticed a rather long pause in the process as most unfortunately we were forced to shut down for five weeks while I battled idiots over our container of panels being held up in a customs bonded warehouse. This I won't get into here but lets just say it is one of my most incredulous stories in my 14 years and most certainly one of the most painful. The five page post covering this battle can be found here.

At any rate finally we are back in full swing battle bruised and wiser now full steam ahead!

Oh what a sweet site, our pallets of panels getting loaded from the warehouse back into a container for their trek north to Playa Grande.

Finally five hours later the tail end is being filled by loose panels in order to get the contain as full as possible. My guys helping the warehouse guys so we get out of here before the 6 pm bell rings.

First thing the next boring we get to do it all over again but now without the aid of a loading dock and forklifts.

Backhoe pulling the first pallet out into the light of day.

Lots of hand work in this offloading process but some pallets we are able to pull out and set down. This particular pallet weights in at 800 kgs or 1,700 lbs so light as building materials go but still requiring caution in handling. Our previous container had a significant degree of damage but fortunately that is not the case this time around.

Down goes our first shipment of the latest Rescom MgO flooring. A massive improvement over the old as it is much harder, way more fiber and mesh weave in it hence way less flex than any competing sub-flooring product on the market like cement board (YUCK) or plywoods (termite food). Take note all joints glued down with Manisbond.

There is one of those Tico unicorns again. Plumbing vent stack set to go up through the panels and out the roof.

Here we are screwing down the sub-floor so as to get a good compression on the glue. The bridging blocks waiting for the next step in the process.

Okay now the bridging blocks screwed between joists and glued and screwed in place. This of course eliminates any flex between sheets as well as adding to the overall rigidity of the floor structure.

Here we have all the PEX water lines converging in the utility room area where they will connect to the manifolds.

Floor deck is now complete and getting loaded with panels ready to assemble.

Now that we are in the panel up stage I have started doing videos of the progress so here you have the results of that on another You tube video.

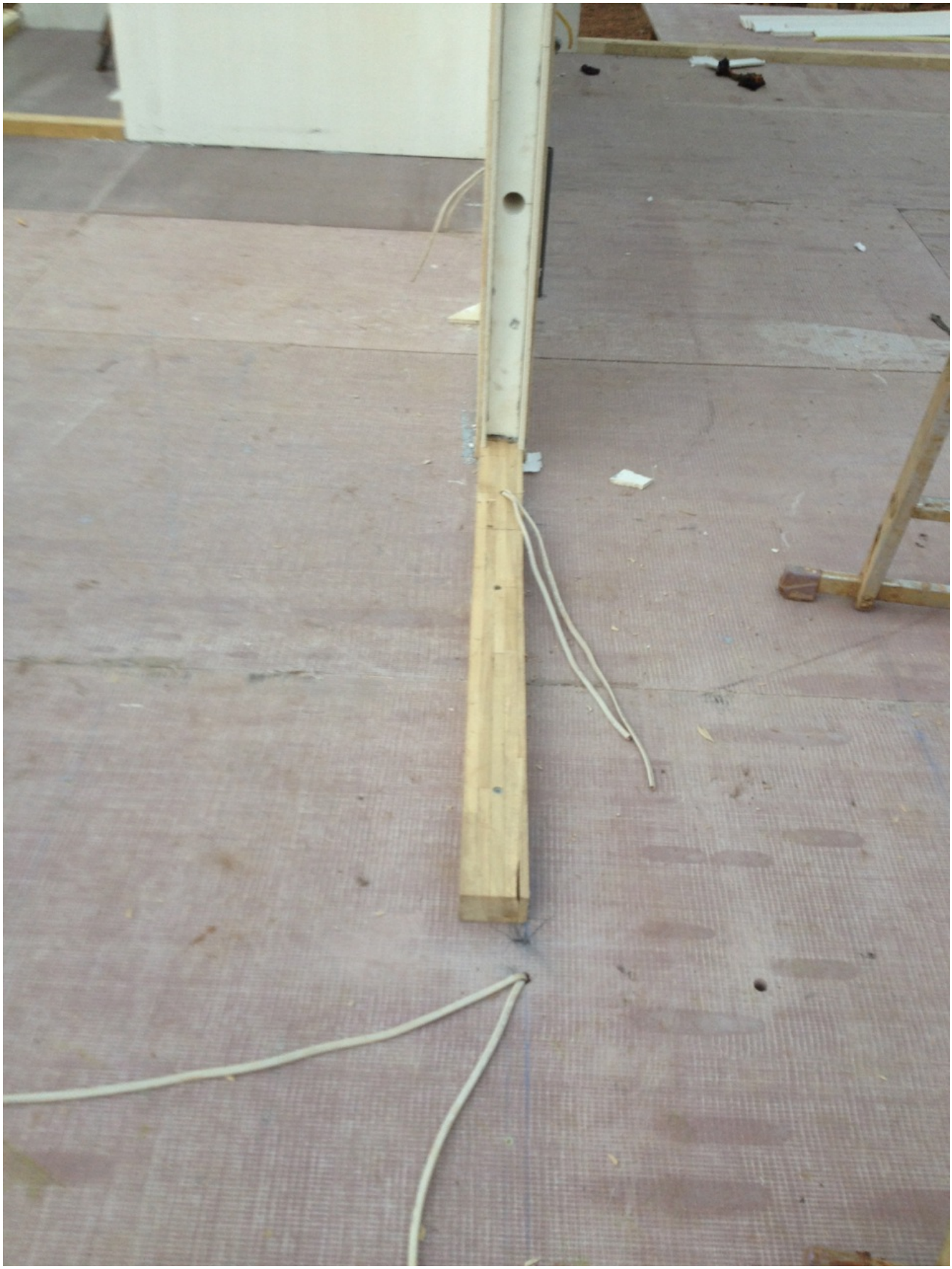
http://www.youtube.com/watch?v=xk1azkATX4Q

As tack of panels that have been processed using a hot knife to remove the styrofoam where the plates will be inserted at both the floor and top of wall. Note the channels cut in the styrofoam to accommodate electrical runs.

Next the tracks or plates if you prefer are laid out on the floor establishing all the wall lines. Take note these are screwed down with beefy #14 screws and of course as always glued down with Manisbond. Technically our homes stay together as a result of this glue and sealer and we could remove all the

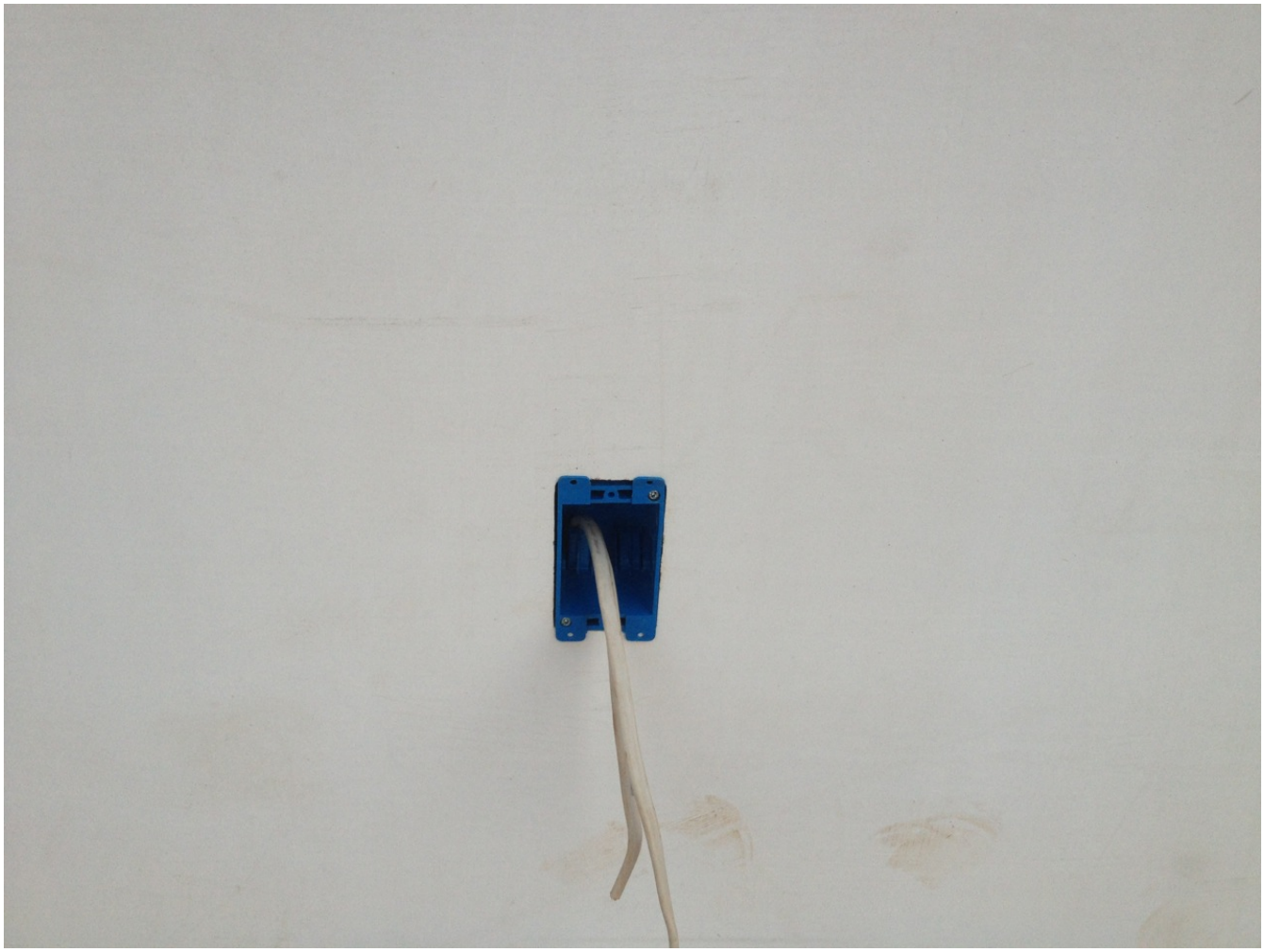
screws and staples the next day and have no affect upon the structural integrity. Also when all components are glued together there is no pressure points created during the stress of an earthquake such as would be the case when only using screws since each screw then becomes a pressure point that could cause fracturing of panel skins. In essence the whole body of the home behaves like the unibody on your car hence will move and flex together during a time of stress.

Two days later a good start of the home going vertical.



A closer up of a typical interior wall where the plate has been glued and screwed and electrical and plumbing lines run out to enter the panels enroute to the final destination.

Note the glue oozing out of the joint between panels as once again absolutely everything is glued together so that Ian and Corynne's home will be most capable of dancing the next time the ground decides to do a little dance.



A close up of a typical electrical box made by Carlon. Note the tight fit here as each of these holes is cut perfectly with a router and jig that makes the holes the exact size of the box. You can tie a horse to these as neither this box will pull out of the wall or the Romex/Loomex cable will pull back into the wall.

South facing view day 5 into the assembly.

South /East view day 5 into assembly.

West view day 5 into assembly.

Cutting of a stud track out of a panel with the hot knife.

Stud ready to go into the panel edge to create the opening for the 4 meter wide folding door.

Gables now extended above the kitchen wall creating the 16 (4.4 mtr)foot high ceiling space.

Now making the turn at that corner we see the gables of the center support wall along with the ventilator openings that will allow rising hot air to escape from the home and living space.

The last panel being fitted into the 4 foot wide (1.2mtr) support beam we have created out of horizontal panels that will carry the roof load over top of the 13 foot (4 meter) wide folding door opening.

Cutting of a track set into an upper plate creates a socket in which to install a metal tongue that will extend out of the wall to support a awning that will go over the front door and windows.

Here you see those tongues protruding from the wall prior to being sandwiched between the two upper plates that make up the union of first level panels to the upper gable panels. Also take note of all the electrical lines run inside the panels that will go up to control ceiling lights and fans.

Now all the gable extensions are completed in the main living area as well as the large 4 foot wide beam we have made out of panels to carry the load over the large folding door opening.

View of South east corner of home as seen from the drive up.

View from the south west of home as seen from the next street over view.

Isac is packing in a foam filler rod here that is stuffed into the panel joints. Later this will have an elastic caulking knifed over the joints sealing them and allowing for flex of ground movements.

Aa close up of what filler rod looks like.

Steel frame was welded up and installed to create one side of a pocket door going into the bathroom.

Recesses made into the shower stall to hold bathing accessories and soaps.

Expanding foam is put in all perforations in the floor to prevent entry of insects.

All windows and doors have been wired to accommodate the security system without of course any visible surface wiring.

Full surround camera system is also wired into walls.

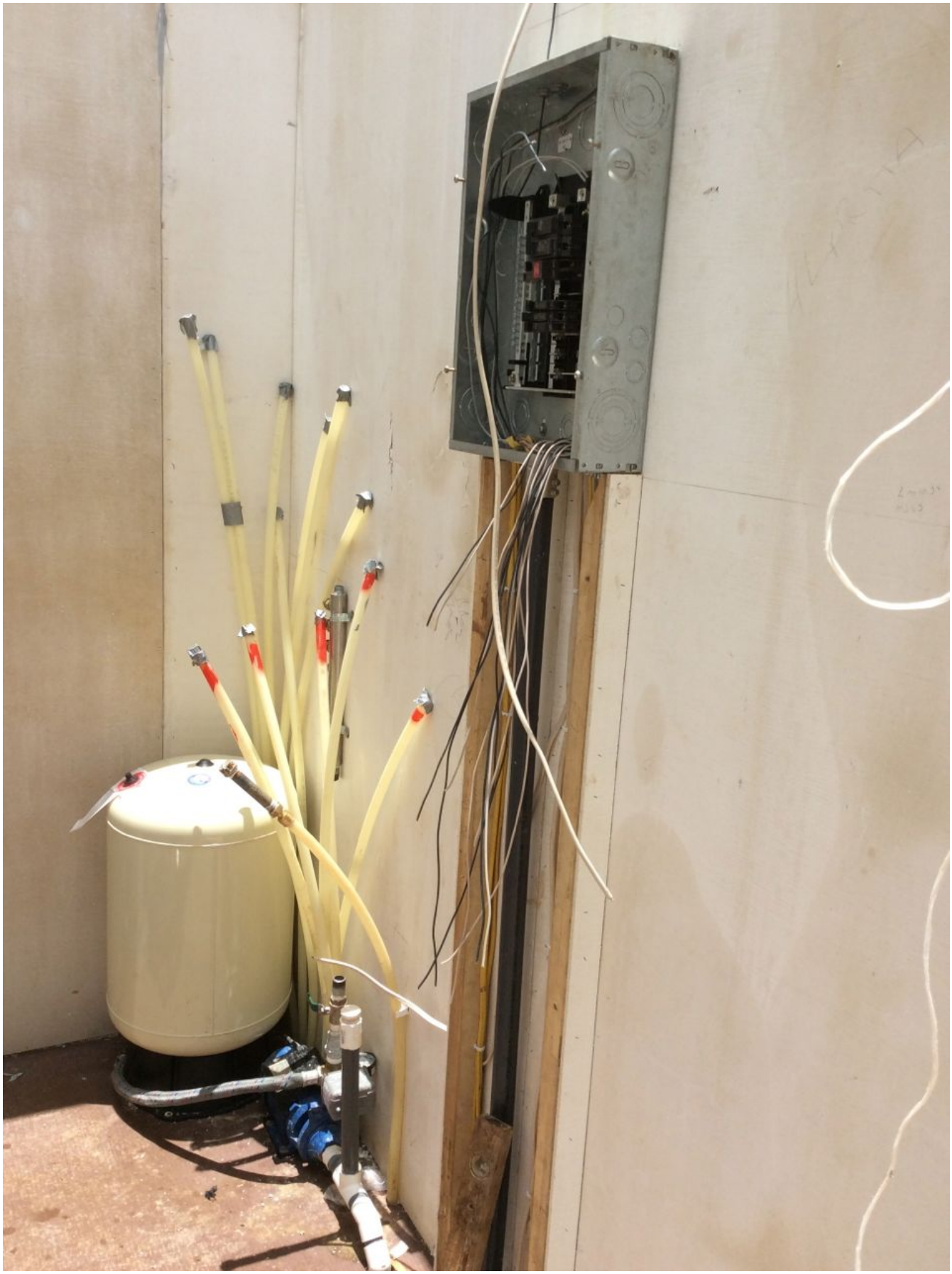
View from the drive.

View from front just getting ready to start roof structure.

Built ins for fridge and pantry made very easy with panels and incredibly solid.

Making use of some of the high ceiling space for extra storage.

Vent line going up to roof through the storage and mechanical/electrical room.



Pressure tank and pump installed for their dual water system that either takes water direct from the project or from their own 5,000 liter holding tank.

Here we see Michael trimming MgO to allow a cap to be put over the door trimmer. The tool being used is a Milwaukee multi-use tool which we use pretty much every day to speed up and improve our work quality. It was also used to cut all the bird's mouths out of the teak rafters where they meet the top plate. I took this tool in for repairs and the largest repair depot in San Jose had NEVER EVER seen one. I guess it is a bit of a unicorn in Costa Rica yet an indispensable asset in our work for both speed and quality yet few Tico workers have any idea what it is.

Corner post and support beam to hold the roof over the master deck. This is all glue laminated teak.

First rafters are going up over the master bedroom and deck.

Rafters over the bathroom, bedroom and storage. Note we keep a 1 meter (39″) overhang on all homes to shade the home and windows as much as is possible to keep with tropical needs.

First eve rafter is installed.

Beam is extended from supporting wall out to hold up the eve or flying rafter.

Rafters over the master closet. Rafters go into a pocket cut into the panel for support as well as being glued and screwed to blocking. Note the vent line peaking out of the wall so as to vent between the two roof lines.

Rafters in place over the master and panel blocks are being added in. All are edged with plastic corners to avoid inevitable cracking from seismic activity.

Close up of filling in the gable between rafters.

Rafters installed over kitchen.

Rafters over front door living room and rake head windows.

Here is an insert just to confuse you. 🙂

Actually it is a new building going up a couple hundred meters from the build site. Hence I observe it from the street every day with shall I say a degree of amusement. There is a huge structural error here. Can you spot it? No doubt this constructor if I dare call him that has spent his life building with concrete yet this picture indicates he knows less than nothing about what he does. The other big question is who the hell is the technical director on this job? Why is he/she not screaming blue murder and warning the smuck paying the bills just how incredibly bad this construction is. Certainly proves why there is supposed to be someone watching out for the technical requirements on any job site.

This is standard post and beam concrete structural system however this beam over the main entrance is absolute junk and could well collapse in any earthquake. You CANNOT CANNOT make a cold joint in concrete and have any structural integrity. This beam to be stopped in any pour must be joined at a bulkhead in the center of a supporting post. In this case at the 45 degree corner to the front entrance where also the steel need to be carried through the bulkhead to tie the two sections together. Whereas what have the IDIOTS DONE? They let the concrete just flow down from the last pour in a taper so now when they fill this in to complete the beam you have what is called a cold joint where new concrete will not, does not and cannot adhere to the old concrete even if done the next day let alone a couple of months later. I would not recommend standing in this doorway in the middle of an earthquake.

I interject here just to show extremely bad habits along with those of good or two cases of different structures that will certainly behave very differently under extreme stress of another bad Guanacaste earthquake such as the 7.4 one that is about to have its third anniversary here in a couple of weeks.

Which of these two buildings is going to dance well when the ground is a dancin????

Yes we have a very solid base with the MgO skins of our panels but now we want to add an impermeable continuous skin to all of those by tying it all together in one sold membrane to give the home a water tight and insect tight covering. So here we start with the first section of stucco being added to our panels beside the storage area. Note a base of very sticky stucco from SUR is troweled onto the wall then a heavy fiberglass mesh in meter wide rolls is embedded into the base stucco.

A second coat is now added over the mesh.

West wall now has its first two coats complete.

The master terrace is now done and we see our technical director Raphael Vargas, on one of his weekly inspections, is checking in to see what we are doing and how.

The process is moving fast as you now see the east view with its first two coats completed.

The west view shows the upper supporting wall being completed with now only the one bedroom and

front of storage area to get it first two coats.

Here we have turned the carport into the metal fabrication shop where we are making the custom window louvers and a trellis for the front of the home using 2 x4 steel tube as well as 1 x 3.

Here you see we have put filler in to not leave any openings for water to enter the metal and start oxidizing at the joints.

First coat of primer is now added. Lets remember we are within 2 kms of a significant surf that will be sending lots of salt onto these finishes. This requires one to spend smart money versus stupid money. Normal paint has around a 5 year life under such conditions. Let's stop and consider what it will be like to try to re-coat all this metal once it is installed on the home. How difficult it is to apply such paint and what kind of finish a typical brush applied paint will leave.

Finish coat of white has been applied to the ventilator louvers. All this paint is a product made under license of a Dutch company by SUR paints here. The catalyzed polyurethane is designed specifically for a marine environment for piers and boats. It is EXPENSIVE meaning it is twice the price of typical anti-

corrosion paints. However it life expectancy should be more in the range of 20 years hence over the life of the finish it is actually cheaper. I drive by construction sites and regularly see someone out there brushing on a paint on metal. That makes for such a crappy finish with such a short life in these environments hence why I call this spending smart money or stupid money. I leave it up to the reader to decide which is which but at the very least to understand the difference and what makes it so.


TRANSOCEAN
MARINE PAINT
DILUYENTE
TRANSURETHANE FINISH COMPONENT
PART B
Lote: 000350682
TRANSOCEAN
MARINE PAINT
T.O. MASTERBOND 4.62 RED
BASE EPO.ANTICORR
MEZCLA 4(A):1(B) VOL

Here is a perfect example from Playa Grande as to what you get in the long run when you put cheap paint on a fence in a beach zone.

View of louvers from the living room.

A close up along with the drywall work to the panels nearing completion.

View up to louvers from outside and below the bedroom ceiling.

Danile here sanding up the looooong beam we laminated that will support the roof over the deck area. This beam is 10 mtrs or 33′ long and had to be made on site due to its size and the fact that the big press is limited to 6 mtr long lengths.

View from the entrance with these dressings added.

Front View.

West view with a peak at the louvers above.

We started to work on the accesses to the home by building up 4 sets of steps to access our elevated home. Here we have started by expanding the sidewalk into a base platform in which to build from.

This also required adding two pilings for both of the front steps with the new plan for the design of such. These steps are sitting on top of over four feet of fill we placed in this area which means over time this fill will compact hence settle. Without pilings going down to virgin soil this settling would cause the these two steps to crack and settle as well. With this protection the dirt will still settle but that means just adding in more fill with zero damage to any of the structure.

In order to complete the look of this corner of the home we have used up some of our junk panels in carrying the wall down to the ground to close in the water tank hole and to provide a base for the gas water heater.

More panel scraps used to provide a backer to sustain the base of the steps.

Base for front step completed with panel used as a back again and first two tears of wood nailed down to create the risers of the step. Here we are using a Melina 2 x 4 to create the risers and structure of the steps.

Here is an example of how you could well call us the glue crew as we glue everything we do. In this case Lanco's Grip Bond #4 which is an exterior glue not affected by normal moisture levels. This prevents entry of any creepy crawlies and it also stops any of the components from warping and twisting after the fact. In essence it is a flu-lam step very similar to all the rest of the structure just done on site as is required in this case.

Here we are assembling the second riser that creates the large platform for the entry into the deck area. Note the black plastic protecting the wood from the moisture of the concrete base, always the greatest area of risk since these two do not play well together at all.

Video covering the Teak Phase of the project including Teak ceilings, Teak deck and entry steps to the home. Now onto the still shots showing the developments of the past couple of weeks.

Each layer of the riser is interlocked together creating a very strong connection.

Front step structure is now completed ready for being filled with fine rock to create the base while reducing the use of concrete to a minimum.

Steps into the electrical/mechanical room are ready for filling.

Filling and tamping down the rock base for deck steps to ready for concrete cap.

Front step now ready to go for capping the treads.

Finishing off the concrete caps that make the base for the exterior tile to be glued down to.

This is to become a feature wall using siding to vary the style hence we have furred out the window and corner to give us something to but the siding to.

PEX network is complete including provisional lines running up to the roof for future solar hot water system.

Truck arrived from our mill down south to deliver another load of Teak so we are now in serious Teak phase of this build. Michael designed the deck area to have big hurky posts and beams to give an unusual effect or we could say the old method of post and beam construction however we have used some tricks here that are anything but conventional. These 8″ x 8″ or 20 x 20 cm posts are not solid Teak but are another glu-lam product. This was done both for economy as well as long term beauty. These posts done with a cheaper core of lower priced wood like Melina or Cedro are then capped with a 1/2″ of Teak. All Teak posts would run $220 each done this way they are $139 each. Compared with solid Teak of this size would run $300 to $400 as you would have to have 35 to 40 year old trees to get a post this size out of. Then when you come back in one to two years it is going to be full of cracks. Not what I call a beauty whereas this process ensures the posts will remain the way they are for generations. Needless to say the least no warping and twisting either.

Cutting the posts to length and lapping them to make the floor joints and upper beam joints.

First post in place testing the fit of the lap down into the floor structure.

First two posts up and permanently anchored into the floor.

All four posts anchored now putting this very long 10 meter – 33 foot long beam in place over them to support the roof and rafters.

WATERLOO Comes to Playa Grande

This was also the same day that the shit royally hit the fan on this project.

Now before I get into the details of what happened I think it is best to understand why this chain of events even has a place in this blog in the first place. Some might call this airing of dirty laundry or as I frame it …. this is intended as a dose of reality as to what can actually happen in any project in Costa Rica and how can you as a reader here gain from learning from others rather than making your new version of old mistakes that will inevitably lead to unnecessary pain and suffering for you. If I was to be polite by sweeping events like this under the carpet most certainly won't serve that end at all. Those that are bothered by my bluntness and candor when I explain events like this are most certainly not likely to be destined to ever be a client hence any contrary opinion is of little relevance to how I run a project or who I choose to work with. Plus I have long been a member of a group called the GOM. (Grumpy Old Men) Hence it should not be any surprise to anyone on this site as to how I chose to deal with a bad and long festering situation such as you will read.

The developer of this project charged into my work site at 9 am Wed. Sept.9th yelling at my employees to stop screaming as he put it. Well no one was or had been screaming. It was just a normal day on a construction site with saws and compressors running and us minding our own business even though it

was not being done quietly. Thus far since I am such a smuck I just have not figured out how exactly you build a house without making noise. To say the least I was not pleased with this interruption of total bullshit. About an hour later I got another phone call from him upon which he started whining some more. That was when he hit the Chilton landmine and I exploded and told him in no uncertain terms to stay off my site and never ever return under any circumstances.

This kind of atmosphere had prevailed over the months of this project to where a hostile environment had been thoroughly established by this Spaniard. I had tolerated it up until this day but all things must come to a head as this situation most certainly did. On the eight day of this project I had sent a very blunt forewarning to the owners advising them they had a big problem with this developer that needed to be dealt with forcefully. It was already very clear at this early stage that this developer had no idea as to how to manage any project or how to behave himself legally and logically as well. In my experience when anyone behaves like this especially after they have received a rather sizable amount of funds for a purchase the situation will always get much worse if the victims of such abuse do not push back forcefully. My first sign of problems showed up when I was just simply reading the rules to the project which would simply be described as nuts, overbearing and actually totally unenforceable from a legal basis under Costarican law. From that point it was a downhill slide into total crap. I say the reward for bullshit is always more bullshit. This experience certainly proved in the end that this complicated formula was most accurate.

The owner wanted a meeting as a result of this blowup to which I refused, to quote me, “What for? So this jerk can irritate me some more and pull some more crap off?” As I asked them, “do you not think I can go most anyplace else and find a more positive work environment?” As a perfect example the project we moved onto since then I have never ever even seen the developer nor did I get three pages of ridiculous or illegal rules thrown in my face. I gave the owners but two choices back me up or go find someone else desperate for work who will tolerate such work conditions. Hence we agreed to close this contract and they could go find someone more tolerant and/or desperate than I. Besides we had completed the basic home and critical infrastructure components so it was not all that difficult of a task for someone to come put the clothing on the home.

Prior to my actual departure though the developer first tried to force me off the job immediately which of course he had no legal grounds in which to do so as he kind of forgot he had actually sold the lot hence had no legal standing what so ever. On top of this as you can see here the roof was wide open in rainy season so would face damages once I pulled my tarps and moved on. The owner was accepting this until I advised them that they needed to get their lawyer involved and force the developer to accept the inevitable costs that would incur from the damages caused from being out in the rain. Once the developer realized this was going to cost him he backed off and let us finish closing in this roof prior to ending the contract which as you can see from the follow photos is exactly what we did.

I never once had a fight or bad words with the owners directly but I was also fed up with the many incidents that had unfolded even while being assured they would handle the developer but never did. (This final event was but one small example of a downhill slide into insanity) The problems had never been addressed forcefully hence the predictable results had indeed come to fruition as my note on day 8 had quite accurately predicted. I bring this up as a learning lesson for all readers to know what can and does happen in Costa Rica with bad developers as well as an example of how not to deal with such. For those still looking for property it is best to look for the signs as to this kind of attitude and when you encounter one of this nature run like hell, do not buy as you will pay heavily in grief and aggravation. That you can take to the bank. I told them I felt sorry for them as they have this person to deal with on an ongoing basis or at least until there is enough owners involved to mutiny then fire his ass out the door from the HOA. Actually this chain of events is quite frequent as I know of at least a half dozen projects where the owners ganged up and forcefully removed the original developer and I have zero

doubt that is exactly what the future holds for this particular project. People are pretty predictable and personalities like this are indeed no exception.

Now that I am stepping on toes I may as well dance while I am at it. The huge problem the owners had here was that this project is owned and developed by a Spaniard which is nothing but bad news. No doubt there is those reading this who are going to say who is this redneck anyways? Well this redneck is one who has been on the receiving end of two Spaniards one bad and the other one down right ugly blatant thief. So yes I have developed an attitude that is not exactly warm towards this group of people. However that has only been further bolstered by taking my own independent pole over the past 7 years after the first occurrence. The results were simple and telling, anyone I have encountered in Costa Rica that has done business with this nationality of expats has wished they had not. I was already committed to build this home when I found out who the developer was and I would have bailed had I known sooner who it was that I was going to have to deal with. I continued my pole by asking others in this community and got very negative feedback especially when I asked his principle sub-contractor that was in the process of quitting as he described it he was just sick and tired of fighting over EVERYTHING! So that is how my prejudicial attitude has evolved since there is one hell of a lot of smoke for there to be no fire. No doubt there is some good ones I just have not found them yet and I am not likely too as I will never be in a situation to deal with one again. Twice was twice too many. Any of the readers are certainly welcome to ignore my warning here and try their luck at this poker game but I most certainly have left the game permanently. The redneck has retired.

Something else to look for in attitude is what I call not well disguised sabotage. This occurs when a developer fancies himself also as a builder when most of them most certainly are not as was this case. He had wanted to build them a nice concrete and tin roofed house but they had declined. His wife had been hired as their architect who had also been fired during the process hence there was always this not far under the surface animosity towards this house and us due to this extensive and not particularly pleasant history. Anyone who does not think such circumstances will have a negative effect during the course of a build is indeed a fool. Again I suggest save yourself a lot of grief by looking for the signs and avoid buying property under such conditions as it will NEVER be worth the inevitable grief.

Now to finish off the story of this home up until our unplanned departure…

Trevor

We built a bath tub to dip all of our Teak tablia (tongue and groove) ceiling into. The white younger wood of teak is susceptible to bug attack if not treated. So 16 gallons later we will have all this new order of wood treated.

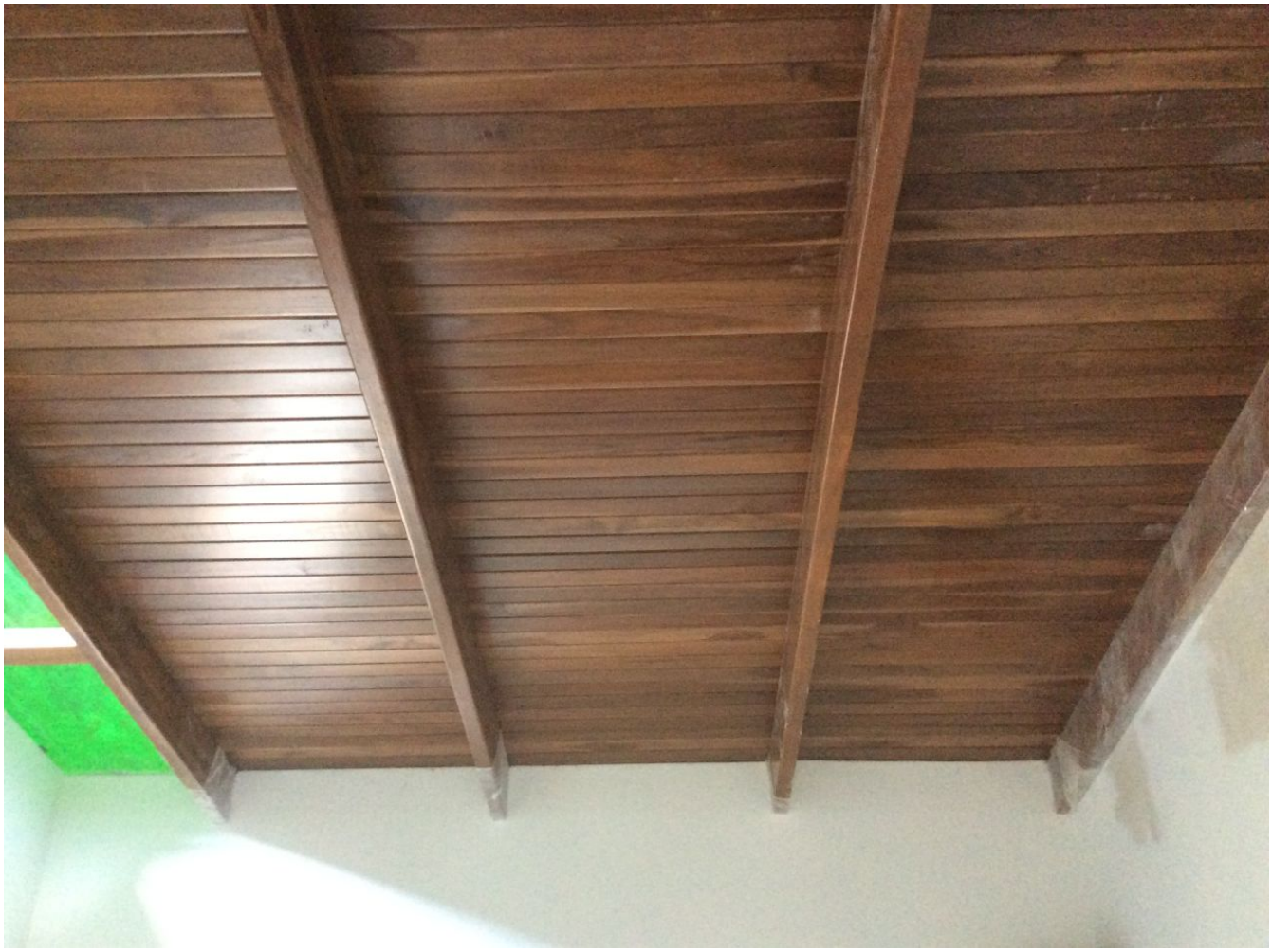
This is the product we use from Xilo call Xilobor.

Tablia drying in the sun after its bath.

Cutting up this mountain of wood so that it fits in with the rafters as we make no joints that are visible.

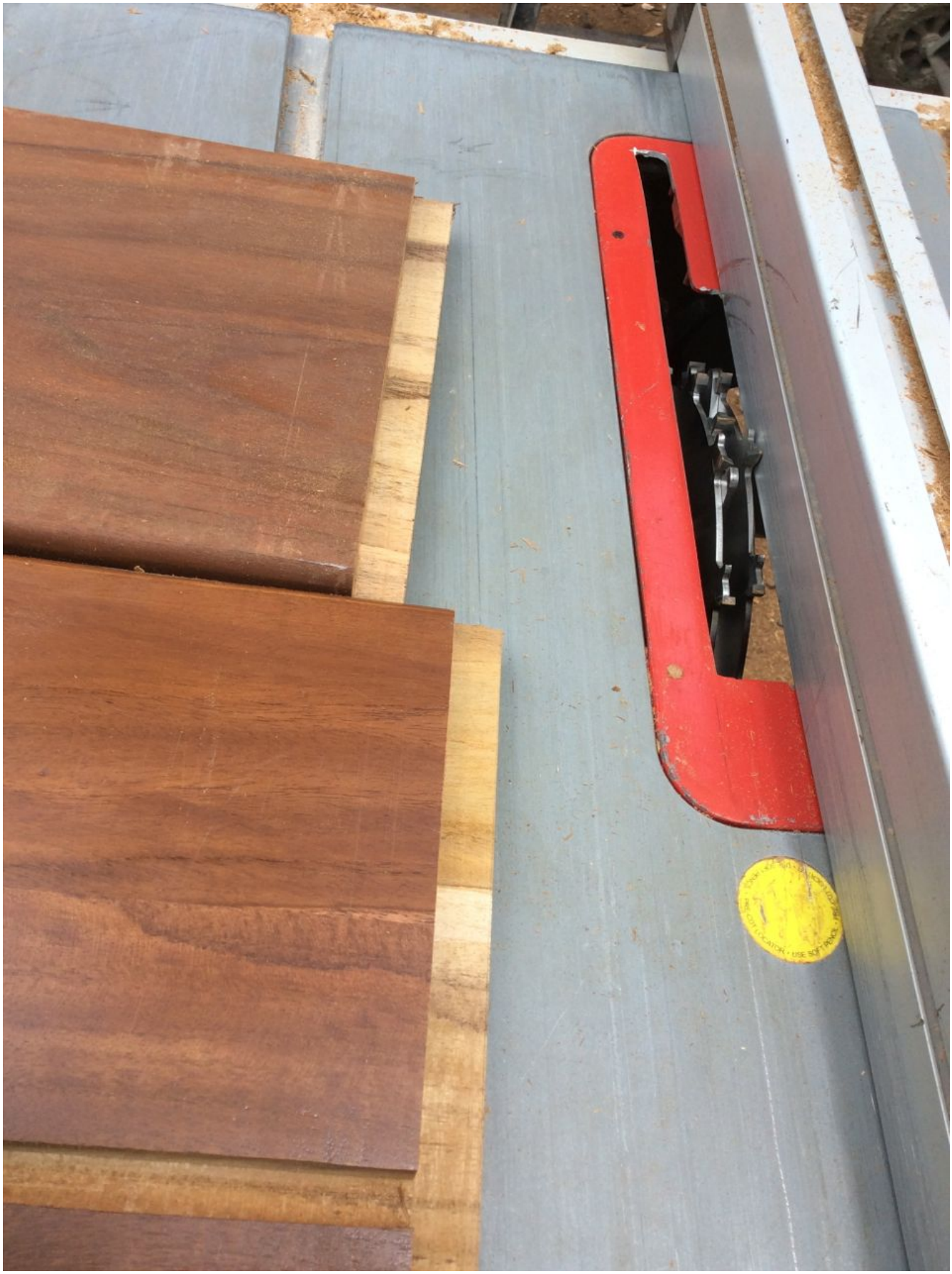
After drying it is all hand sanded then stained with a linseed oil product from Lanco. Here it is drying after being oiled.

Spraying oil onto facia boards. Note the groove in the facia is there to receive the tablia ceiling making a tight joint where the roof deck meets the facia.



First section of Teak roof completed. This has had two coats of SUR's best catalyzed polyurethane has been sprayed on with a satin finish.

Facia with it oil finish applied, the exterior is left as oil to withstand the climate as polyurethane is destroyed in 5 to 8 months of our climate.



Here we cut rabbit joints in the end of each facia board in order to get a tight fit.

This is the end result.

The rafters going up over the terrace.

Facia installed and ready to receive the tablia or T & G roof decking.

Elsewhere the crew is advancing quickly as the tablia is finished with oil and polyurethane.

The other side of the roof is finished with its eaves covering.

Eaves are carried out onto the front face of the home over the trellis.

The living room and kitchen have their ceiling completed.

Ceiling finished off the master bedroom as well.

Final load of Teak arrives from the sawmill.

This is the pile of Teak decking material that will be going down on both terraces.

This was specially cut at the mill to work with deck clips so that no fasteners will be visible.

The pressure treated pine also arrived for the strapping for the roofing system.

Here the first layer of strapping is being applied.

Styrofoam is now being laid over the bedroom ceilings in case A/C is ever added to these rooms.

Completed with roofing in UPVC.

Front roof now strapped.

Reflective foil going down prior to the addition of a second layer of strapping goes down over top of it. This is critical point, no foil should touch a roofing surface. In this case the foil is suspended between the two strappings creating a double airspace which insulates both for radiant heat entry as well as roof

noise.

View from west side of home with roof completed.

Front View. Take note of the feature wall done in a cement board siding.

View from driveway as we near completion of roof.

Rain is about to start as we wrap up the close in of this roof.

That brings to a close our part of this project as we packed up our tools in the rain and with the great relief of myself and my crew we left and moved onto greener pastures.

Since then the client has come back to me looking for details and supply of materials that they could not acquire in Guanacaste. Of which I provided as I hold no grudge with the clients but to say the least the same does not apply to the developer. I would never ever return to this project or at least not prior to his eventual and most predictable demise that is.

Trevor

Comments

Home Diary – Playa Grande **— 6 Comments**

Jackie Stephens
on May 11, 2015 at 3:49 PM said:

Looks like another great home going up. Always amazed how clutter free your build sites are and the organization you maintain throughout the construction period. Really appreciate the step-by-step

description and photos. I look forward to the next phase update and even more to you and your team working with us on our project.

Corynne
on May 24, 2015 at 4:34 PM said:

We are very happy with the progress, attention to detail, commonsense, and immaculate sense of doing things RIGHT that Trevor and his crew brings to the project. Thank you Trevor and crew, we are very grateful!

Darren Ackerman
on June 1, 2015 at 6:47 PM said:

Trevor – it is always interesting to see you working WITH nature versus fighting it in each home construction process. Shows how much emphasis you put into the green concept – in design, in materials and especially in function. I click on this site every other day to catch new updates. Thanks again!

Trevor
on June 1, 2015 at 10:03 PM said:

Thank you Darren for your comments. Glad to see you look forward to the updates to our ongoing projects.

Trevor

Barry Walker
on November 14, 2015 at 7:11 PM said:

Trevor,

When is the next update on the house and have you started some more that you can add to the site? I enjoy reading your attention to detail.

Darren Ackerman
on November 20, 2015 at 2:39 PM said:

Trevor – excited to see how this one turns out. Nice to all the detailed explanations in both words and pictures. You can almost never put too much info out there, especially on how to do things right the first time. Thanks for all your efforts on this site!