

Design Specifications

2209 MacArthur

Houston, TX 77030-2011

NOTE: NO BUILDER Grade materials were specified in the construction of the house. Builder grade cabinets and flooring were used in the garage apartment and cabana.

House Foundation items

- 30 ea. 15' deep drilled pilings with 3' bell bottoms filled with steel reinforced concrete approximately every 9' on center both ways to support the foundation slab. This was engineered to ensure that the foundation was solidly supported on compacted sandy soil that would support the weight of the building and not subject the slab to substrate shrinkage in dry seasons.
- Void forms were used in the construction of the house slab providing a void space between the soil and the bottom of the concrete slab to reduce/eliminate upward pressure from expansive clay soils.
- Concrete used in the house was a specially designed mixture that increased the compression strength to ~ 6000 PSI on 28-day cylinder test. The mix was used to reduce the possibility of ASR and increase the compression strength of concrete to more than double the standard 3200 PSI. Approximately 100 Cubic Yards of concrete were used in the construction of the house.
- 5/8" galvanized hurricane anchors were placed every 8' along the exterior walls and 2 at each exterior outside corner. The anchors were tied to the steel embedded in the concrete.
- The slab height was placed 1.5 feet above the highest known water depth for the lot established during tropical storm Allison. #4 rebar at 1' on center both ways for the slab and #6 rebar cages were used in the support beams.

Structural

- Due to the large open spaces in the ground floor and entrance the structural engineer added 5 shear walls on the ground and second floor to stiffen the structure. Shear walls resist lateral movement, twisting and collapse during high wind events.
- Structural steel columns were fastened to the concrete foundation beams to support beams under the second floor.
- Pre-manufactured wood I-Joist spaced on 12" foot or 16" centers support the 1 1/8" subfloor which was water sealed after installation. The subfloor was screwed to the I-Joists to prevent movement and squeaking.

Garage Foundation items

- Drilled pilings with 3' bell bottoms filled with steel reinforced concrete approximately 9' on center both ways to support the foundation slab.
- 2 layers of steel reinforcement in a 6" slab with concrete designed for 4000 PSI at 28 days were used to support the live loads of SUVs in the garage and people in the garage apartment. #4 rebar at 1' on center both ways and #6 wire mesh tied to the rebar.

- Hurricane anchors were placed every 8' along the exterior walls embedded in the concrete and tied to the reinforcing steel.

Hurricane strapping

- Both buildings were constructed using hurricane strapping that was inspected by the city of Houston to meet building specifications at the time of construction.

Insulation

- The house was constructed with 2" x 6" exterior walls to accommodate 5.5" of open cell spray foam insulation providing a very air tight building with exterior resistance rating of approximately R 13.
- Two exterior vapor barriers were installed over the exterior sheathing to prevent/reduce vapor conduction. An initial layer of house wraps and a secondary vapor barrier layer beneath the stucco metal lath was used.
- Base plates were sealed with rolled foam and spray foam insulation.
- The house attic is 8" of open cell spray foam insulation with fire retardant on foil backed OSB sheathing.
- The garage is fully insulated with blown cellulose in the 2x4 exterior walls and 12" of blown cellulose in the ceiling joist on the ground floor. The attic space is closed cell spray foam.
- Windows in the house are Pella high performance, double glazed windows.
- The house was subjected to a door fan test to measure air infiltration and duct pressure leak test and successfully passed both. The house is very air tight.

Heating and Ventilation

- There are two central air conditioning units for the house and a split ductless unit for the garage apartment. The central A/C units had both evaporator coils replaced in 2022 and 2023 and are under a new 10-year warranty.
- There are also two central air furnaces that are rarely engaged as the Heatilator fireplace in the family room provides sufficient heat for the house even in freezing weather due to the insulation and air tightness of the house.
- Each bathroom and the utility room are equipped with ventilation fans to help remove humidity from the home. The average humidity year-round in the home is approximately 40%.
- The primary bedroom has an electric fireplace used mostly for ambiance but a built-in electric heater can be used as needed.
- Highly effective Hampton Bay Ceiling fans are located in the living room, study, all bedrooms and the primary bathroom.

Plumbing

- Water services are from the city and a new water main was installed within the last five years. Meters are electronic.
- All water lines in the house are PEX divided by two manifolds servicing the east and west sides of the house. Water lines in the garage apartment and cabana are PVC. No water lines were frozen during the recent freezes and service was not disrupted due to frozen lines.
- All fixtures in the house are Kingston Brass with Oil Rubbed Bronze finish.

- There are three tankless hot water heaters. Two service the east and west sides of the house and one services the garage and cabana. The two house water heaters have an interconnect that can allow a manual switch over so that a single failure of a water heater does not eliminate all hot water on one side of the house.
- The waste water system is linked to the city of house sewers and has never had any problems.

Woodwork (house only)

- All cabinets, benches and vanities are custom-made built-in-place units using cabinet grade plywood for high durability.
- The stairs, trim and stair rails were custom built by the cabinetmaker.

Floors

- The wood floor is a commercial grade laminate using hickory (1280 Janka scale). It is the hardest domestic species of wood and has held up well after 9 years of pets, children and use.
- The natural stone floors are Italian slate and were chosen for their durability and warm tone. The same slate was also used for tub / shower surrounds, kitchen counter back splash and the fireplace surround.

Roofs

- The shingles on the house and garage are 25-year composite shingles which have weathered two hurricanes with no damage.
- The house also has custom metal roof over the study bay window, front porch and roof over the 3 highest windows facing the street.

Lighting, Electrical and Electronics

- Power services are currently from Reliant.
- All lighting is LED with the exception of some florescent light in the master closet, garage, utility room and cabana.
- There are 3 electrical panels, one on each floor of the house and one in the garage. The garage is on a separate meter but is billed as one bill.
- The house 2nd floor panel has innerduct to accommodate a future solar power installation and the house has a south facing roof with room for panels
- All bedrooms, the study, the family room and the garage apartment have CAT-5 wiring and can support Gigabit speed internet.
- The house power is fed underground along with fiber optic cable from AT&T for gigabit speed internet service.
- The house network is connected to a 24 port switch located in the attic with 5 POE ports for the cameras.

Security

- The house has 4 AXIS commercial grade security cameras with views of exterior of the house.
- Interior cameras are currently installed as well but will not be part of the sale and are easily replaceable.
- The home alarm system is a purchased, not leased alarm system by ELK, a top rated commercial and residential provider for security alarm systems. All sensors are hard wired so there is no

need to replace batteries. The system can be linked to most commercial monitoring services accessible via the internet.

- Motion sensing lighting is installed around the perimeter of the house, garage and back yard.
- The driveway has a motion sensor connected to the house alarm.

Grounds

- The house has a small herb garden close to the kitchen that currently is used for Blueberries, mint and green onions. There is a planter along the back-fence line with a fig tree and some ornamental plants.
- There is a live oak, crepe myrtle and Texas laural tree in the front yard. The lawn is newly sodded with centipede TIF variety grass.
- The back yard is newly fenced (fall 2022) and stained for durability.

Room Sizes (Inside dimensions)

Garage Apartment = 490 Sq. Ft

Garage Apartment Bedroom 10 x 9 with 2 closets

Garage Apartment Bathroom = 10 x 8

Jack & Jill Bedroom North = 13 x 11.5

Jack & Jill Bedroom South = 16 x 10

Jack and Jill Bathroom and vanities = 17 x 7

Day Bed / Nursery = 11 x 10

Primary Bedroom = 19.5 x 14

Primary Walk in Closet North = 13 x 5

Primary Walk in Closet South = 19.5 x 5

Primary Bathroom = 19 x 14

Kitchen / Breakfast = 17 x 15

Dining = 14 x 12

Living = 19 x 15

Office / Library = 13 x 13

Downstairs Bathroom = 17 x 6