

# ELECTRICAL SYSTEM

## MAIN SUPPLY AND SERVICE ENTRANCE

- Type: Over head
- Location of the service entrance: From the east side of the building
- Entrance amperes: 100 amps
- Entrance voltage: 240 volts
- Meter: Accessible from outside on the east side
- Conditions:
  - 1- The entrance wires conduit is not sufficient for upgrading the system to 200 amps.
  - 2- The meter covering in the east side is made of non-conforming material.
  - 3- Keep the perimeter of the meter covering sealed, and also install a top cap to shed the water away from it.



## GROUNDING SYSTEM

- Type: There is a grounding wire connection to the incoming water line and from the panel leaving upward and probably through the ceiling, but the effectiveness of grounding can not be verified.

## DISTRIBUTION PANEL AND ITS RATING

- Panel type: Circuit breaker Panel rating 120 Ampere with 240 volts
- Location: In the ground floor Laundry room
- Distribution wire type: Copper
- Conditions:
  - 1- No AFCI was present for bedrooms' outlets due to new standards.
  - 2- No GFCI breaker was present in the panel.
  - 3- It did not have at least 3 feet clearance from the bottom and in front for accessibility.
  - 4- Does not provide enough clearance from sides due to new standards for fire hazards.
  - 5- It did not have directory map for checking the breakers sizes and their connection.
  - 6- If the 2\*20 Ampere breakers are serving a specific appliance, they should be connected to each other (which in this case they did not). And due to not presence of a map in the panel this matter could not be checked.
  - 7- There was not room in the panel for future expansion.
  - 8- There was a non-conforming conduit under the base of panel for garage use and continuity of it could not be confirmed.



## OVERCURRENT DEVICES

- Type: Circuit breakers
- Conditions: there was co-al circuit breaker in the panel which is for use of both copper and aluminum wires, but the presence of aluminum wire could not be verified.

## BRANCH CIRCUIT WIRING

- Type: Copper
- Conditions:
  - 1- Added wire for lighting switch under the stair did not match the required ampere which would be a fire hazard issue.
  - 2- Added wire for the two installed outlets in the second floor bathroom did not match the required ampere which would be a fire hazard issue.
  - 3- There were out of junction box connection of wires in the attic and under the ceiling of ground floor which could be a fire hazard issue.
  - 4- The wire connection for the ground floor exhaust fan did not match the required ampere and could be a fire hazard issue.
  - 5- There was a loose junction box on the floor with no cap under the stair.
  - 6- There was not appropriate wiring (wiring under the roof joists or over wall covering) for locations such as: Under the ground floor ceiling and in the second floor room (room to the balcony), and a few other places.
  - 7- There were loose wires passing under the beams and joists and under the staircase walls.



## OUTLETS AND SWITCHES & LIGHTINGS

- Conditions:
  - 1- The only GFCI outlet located on the outside south wall does not have proper cover.
  - 2- There is no GFCI outlet in the second floor bath room which is a shock hazard.



- 3- The outlets close to the kitchen sink were not GFCI type which could be a shock hazard, and the left hand side one is even loose.



- 4- The outlet in the second floor corridor had broken cover which could cause a fire hazard.



- 5- The switch light and junction box used in the ground floor (under the staircase) are nonconforming type.



- 6- Two of the checked outlets had loose wire connections which could be a fire hazard (one in the ground floor close to the room and one in the second floor).



- 7- The outlets in the ground floor (under the staircase) and in laundry room did not have any cover which could lead to fire hazard issue.



## **GROUND FAULT CIRCUIT INTERRUPTERS**

As mentioned in the panel and outlet section

## **ARC FAULT CIRCUIT INTERRUPTERS**

Type: As mentioned in the panel section

## **ALARM SYSTEM (SMOKE, CO, AND INTUDER)**

- Smoke alarm: I was told that the installed smoke detector did not respond to manual tester, and the fire alarm system in the ground floor needs specialized person due to their type.
- Co alarms: Not applicable
- Intruder alarm: There was an intruder alarm present, but it was not tested.
- *Recommendation:* Install an operable smoke detector on the second floor corridor due to fire and safety concerns.

- ❖ ***Recommendation:*** Check all the aspects of the electrical system for their safety, fire hazard, shock hazard, and their proper operation by a licensed electrical contractor due to mentioned deficiencies. Also improve the accessibility of the panel and confirm the outside installation of the vacuum cleaner.