

# Sustainable Design/Build



SUSTAINABLE  
HOMES, INC.

Darrel McMaster - Sustainable Homes

# Design

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## Design:

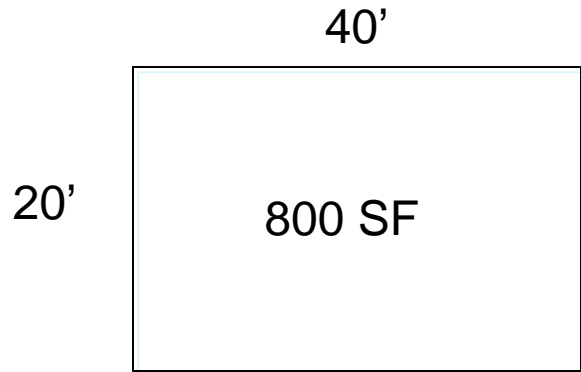
- ▣ Location and Orientation
- ▣ Cross Ventilation
- ▣ Passive Solar
- ▣ Smart Numbers



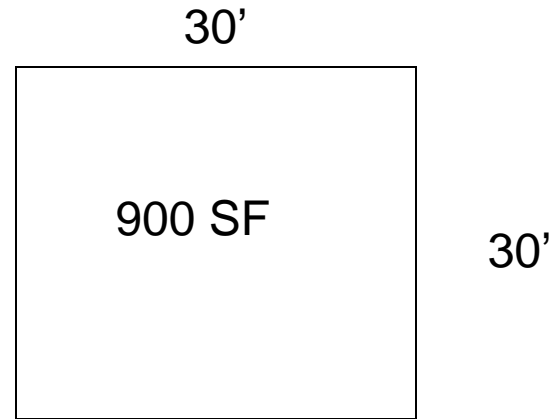
# Design - Passive Solar



# Design - Smart Numbers



Exterior: 120 LF



Exterior: 120 LF

# Building Envelope

## Building Envelope:

- Spray-Foam, Insulated Concrete Form (ICF), Structural Insulated Panels (SIP)
- Tight Construction
- Solar Heat Gain Coefficient (Windows and Doors)
- Fireplace

# Building Envelope - Spray Foam



# Building Envelope - Spray Foam



# Building Envelope - Tight Construction



- ▣ The goal is to control the inside environment and limit unwanted infiltration of the outside environment

# Building Envelope - SHGC

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- ▣ Windows
- ▣ Doors

# Building Envelope - Fireplace



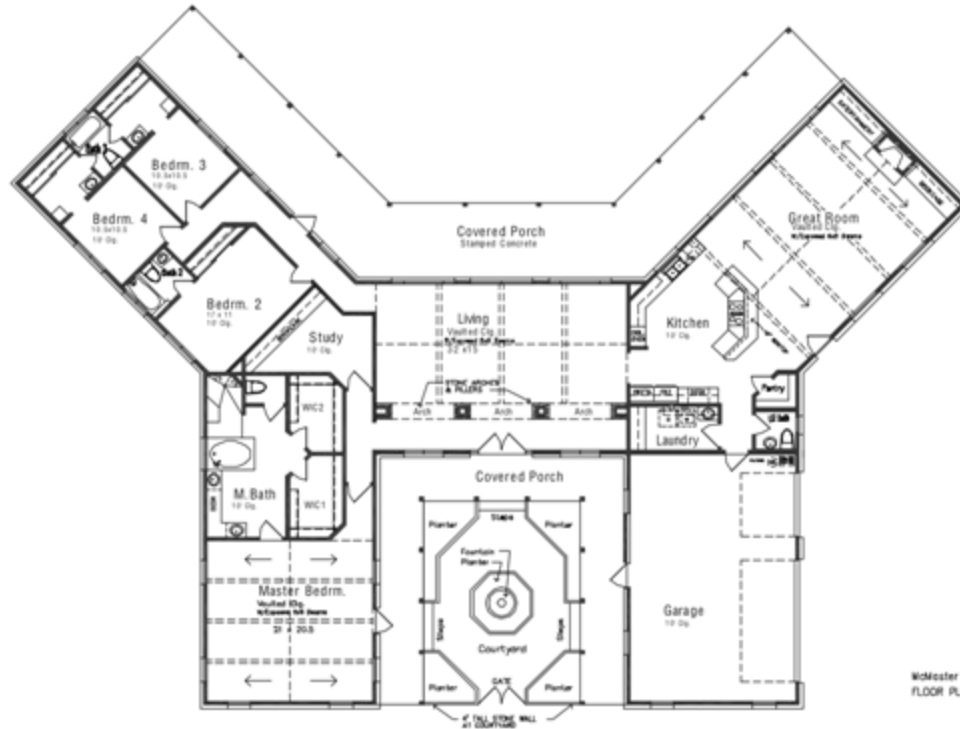
# Energy Efficiency

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## Energy Efficiency:

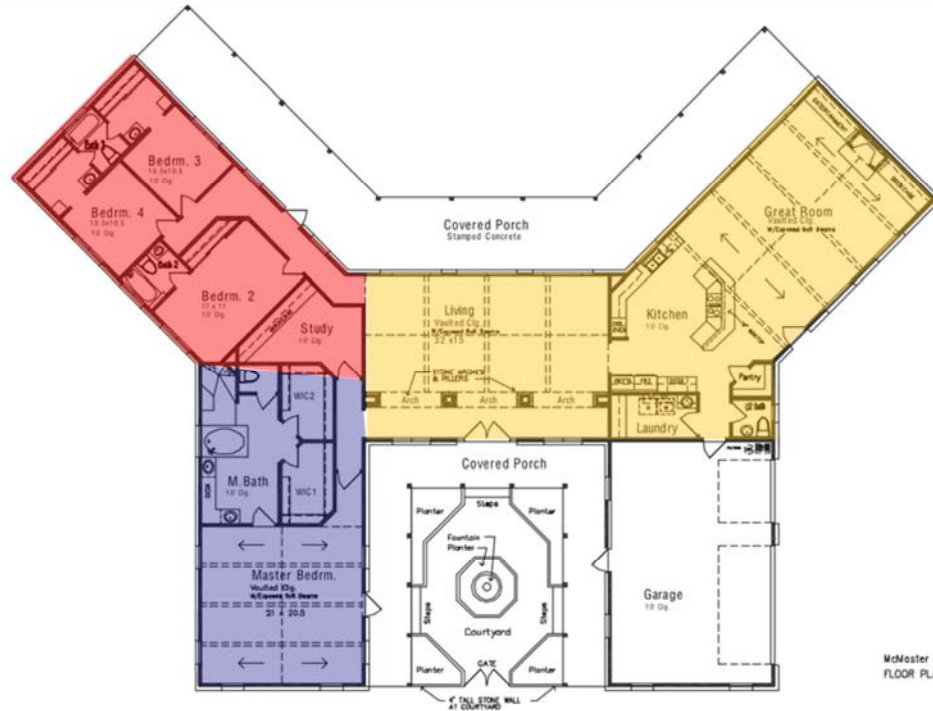
- ▣ Through Design
- ▣ Location of rooms/Zoned Air Conditioning
- ▣ Tank-less water heaters
- ▣ Lights, bulbs, and fans
- ▣ Grid-tied Solar Array (5.9 KW)

# Energy Efficiency - Through Design



WdMester  
FLOOR PLAN

# Energy Efficiency - Rooms and AC



# Energy Efficiency - Water Heaters



# Energy Efficiency - Lights, Bulbs, Fans

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- ▣ Energy Start Light Fixtures
- ▣ Florescent and LED Bulbs
- ▣ Energy Start Fans

# Energy Efficiency - Solar Array



# Energy Efficiency - Solar Array



# Water Efficiency



## Water Efficiency:

- ▣ Rain Catchment
- ▣ Water efficient plumbing fixtures
- ▣ Energy Start Appliances
- ▣ Drip Irrigation and Weather based controls

# Water Efficiency - Rain Catchment



# Water Efficiency - Rain Catchment



# Water Efficiency - Rain Catchment



# Water Efficiency - Efficient Fixtures

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- ▣ Low-flow Showers
- ▣ Dual-flush Toilets
- ▣ Low-flow Faucets with Aerators
- ▣ Drip Irrigation and Weather based Controls

# Water Efficiency - Appliances

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- ▣ Dishwasher
- ▣ Washing Machine

# Water Efficiency - Drip Irrigation



# Air Quality

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## Air Quality:

- ▣ No Volatile Organic Compounds (VOCs)
- ▣ Dyed Concrete Floors
- ▣ No Urea Formaldehyde used in the construction of Cabinets
- ▣ Energy Recovery Ventilator

# Air Quality - Dyed Concrete Floors



# Air Quality - No Urea Formaldehyde



# Air Quality - Energy Recovery

