



ENERGY STAR was introduced by the U.S. Environmental Protection Agency (EPA) in 1992 as a voluntary partnership to reduce greenhouse gas emissions through increased energy efficiency.

ENERGY STAR qualified homes are at least 15% more energy efficient than homes built to the 2004 International Residential Code (IRC) and include additional energy-saving features that typically make them 20-30% more efficient than standard homes.

**WHAT MAKES A HOME  
ENERGY STAR?**

## **TIGHT CONSTRUCTION AND DUCTS**

Advanced techniques for sealing holes and cracks in the home's "envelope" and in heating and cooling ducts help reduce drafts, moisture, dust, pollen, pests, and noise. A tightly sealed home improves comfort and indoor air quality while lowering utility and maintenance costs.

## **EFFECTIVE INSULATION**

Properly installed and inspected insulation in floors, walls, and attics ensures even temperatures throughout the house, while using less energy. The result is lower utility costs and a quieter, more comfortable home.

## **EFFICIENT HEATING AND COOLING EQUIPMENT**

An energy-efficient, properly installed heating and cooling system uses less energy to operate, which reduces your utility bills. This system can also be quieter, reduce indoor humidity, and improve the overall comfort of your home.

## **HIGH PERFORMANCE WINDOWS**

Energy-efficient windows employ advanced technologies, such as protective coatings and improved frame assemblies, to help keep heat in during the winter and out during the summer. These windows also block damaging ultraviolet sunlight that can discolor carpets and furnishings.

## **EFFICIENT PRODUCTS**

Your home may also be equipped with ENERGY STAR qualified products—lighting fixtures, compact fluorescent bulbs, ventilation fans, and appliances—that offer additional energy savings.

## **INDEPENDENT TESTING**

While it's easy to claim that homes are energy efficient, ENERGY STAR builder partners back that up with verification by an independent Home Energy Rater. The Rater conducts onsite inspections and testing to verify the performance of the energy efficiency features in your home.

**WHAT THIS MEANS FOR US...**

**AIR BARRIER**

# WHAT THIS MEANS FOR US...

## AIR BARRIER

- Caulk between bottom plate and sheathing



# WHAT THIS MEANS FOR US...

## AIR BARRIER

- Caulk between bottom plate and sheathing
- Caulk window frame during installation



# WHAT THIS MEANS FOR US...

## AIR BARRIER

- Caulk between bottom plate and sheathing
- Caulk window frame during installation
- Gasket around attic access

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## AIR BARRIER

- Caulk between bottom plate and sheathing
- Caulk window frame during installation
- Gasket around attic access
- Caulk all penetrations in top plate

# WHAT THIS MEANS FOR US...

## AIR BARRIER

- Caulk between bottom plate and sheathing
- Caulk window frame during installation
- Gasket around attic access
- Caulk all penetrations in top plate
- Spray foam all penetrations in exterior wall

**WHAT THIS MEANS FOR US...**

**THERMAL BARRIER**

# WHAT THIS MEANS FOR US...

## THERMAL BARRIER

- Insulation behind tubs



# WHAT THIS MEANS FOR US...

## THERMAL BARRIER

- Insulation behind tubs
- Insulation attached to attic access

# WHAT THIS MEANS FOR US...

## THERMAL BARRIER

- Insulation behind tubs
- Insulation attached to attic access
- Proper insulation installation



# WHAT THIS MEANS FOR US...

## THERMAL BARRIER

- Insulation behind tubs
- Insulation attached to attic access
- Proper insulation installation
- Horizontal Ladder Blocking



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- Insulation behind tubs
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- Horizontal Ladder Blocking
- California Corners



# WHAT THIS MEANS FOR US...

## THERMAL BARRIER

- Insulation behind tubs
- Insulation attached to attic access
- Proper insulation installation
- Horizontal Ladder Blocking
- California Corners
- Air dam



# WHAT THIS MEANS FOR US...

## THERMAL BARRIER

- Insulation behind tubs
- Insulation attached to attic access
- Proper insulation installation
- Horizontal Ladder Blocking
- California Corners
- Air dam
- Cardboard wind baffles



# WHAT THIS MEANS FOR US...

## THERMAL BARRIER

- Insulation behind tubs
- Insulation attached to attic access
- Proper insulation installation
- Horizontal Ladder Blocking
- California Corners
- Air dam
- Cardboard wind baffles
- OSB above soffits

**WHAT THIS MEANS FOR US...**

**EQUIPMENT SELECTION**

# WHAT THIS MEANS FOR US...

## EQUIPMENT SELECTION

- Size calculations for HVAC

# WHAT THIS MEANS FOR US...

## EQUIPMENT SELECTION

- Size calculations for HVAC
- $\geq$  14.5 SEER Condenser

# WHAT THIS MEANS FOR US...

## EQUIPMENT SELECTION

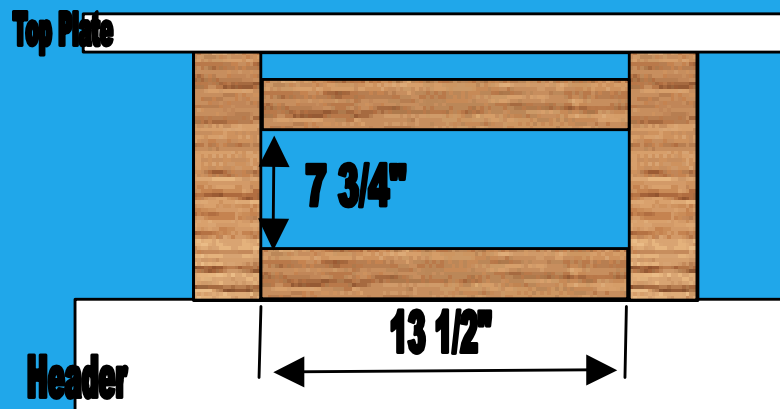
- Size calculations for HVAC
- $\geq 14.5$  SEER Condenser
- Proper duct sealing



# WHAT THIS MEANS FOR US...

## EQUIPMENT SELECTION

- Size calculations for HVAC
- $\geq 14.5$  SEER Condenser
- Proper duct sealing
- Transfer vents



# WHAT THIS MEANS FOR US...

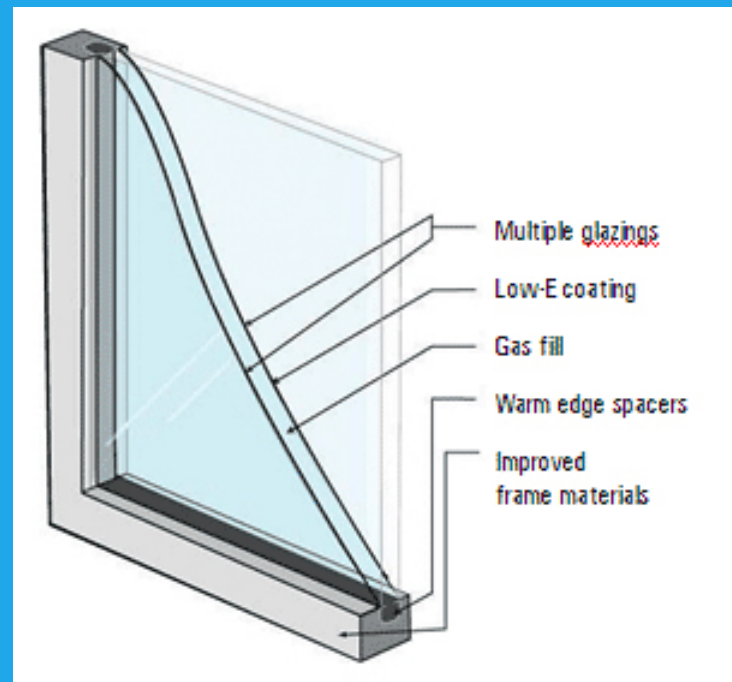
## EQUIPMENT SELECTION

- Size calculations for HVAC
- $\geq$  14.5 SEER Condenser
- Proper duct sealing
- Transfer vents
- Min R6 for HVAC ducts

# WHAT THIS MEANS FOR US...

## WINDOWS PACKAGE

- Low E
- Double Pane
- Energy Star Rated





# WHAT THIS MEANS FOR US...

## THIRD PARTY VERIFICATION

- Blower door test



# WHAT THIS MEANS FOR US...

## THIRD PARTY VERIFICATION

- Blower door test
- Duct blaster test



# WHAT THIS MEANS FOR US...

## THIRD PARTY VERIFICATION

- Blower door test
- Duct blaster test
- Infrared





**LEED**<sup>TM</sup>  
FOR HOMES

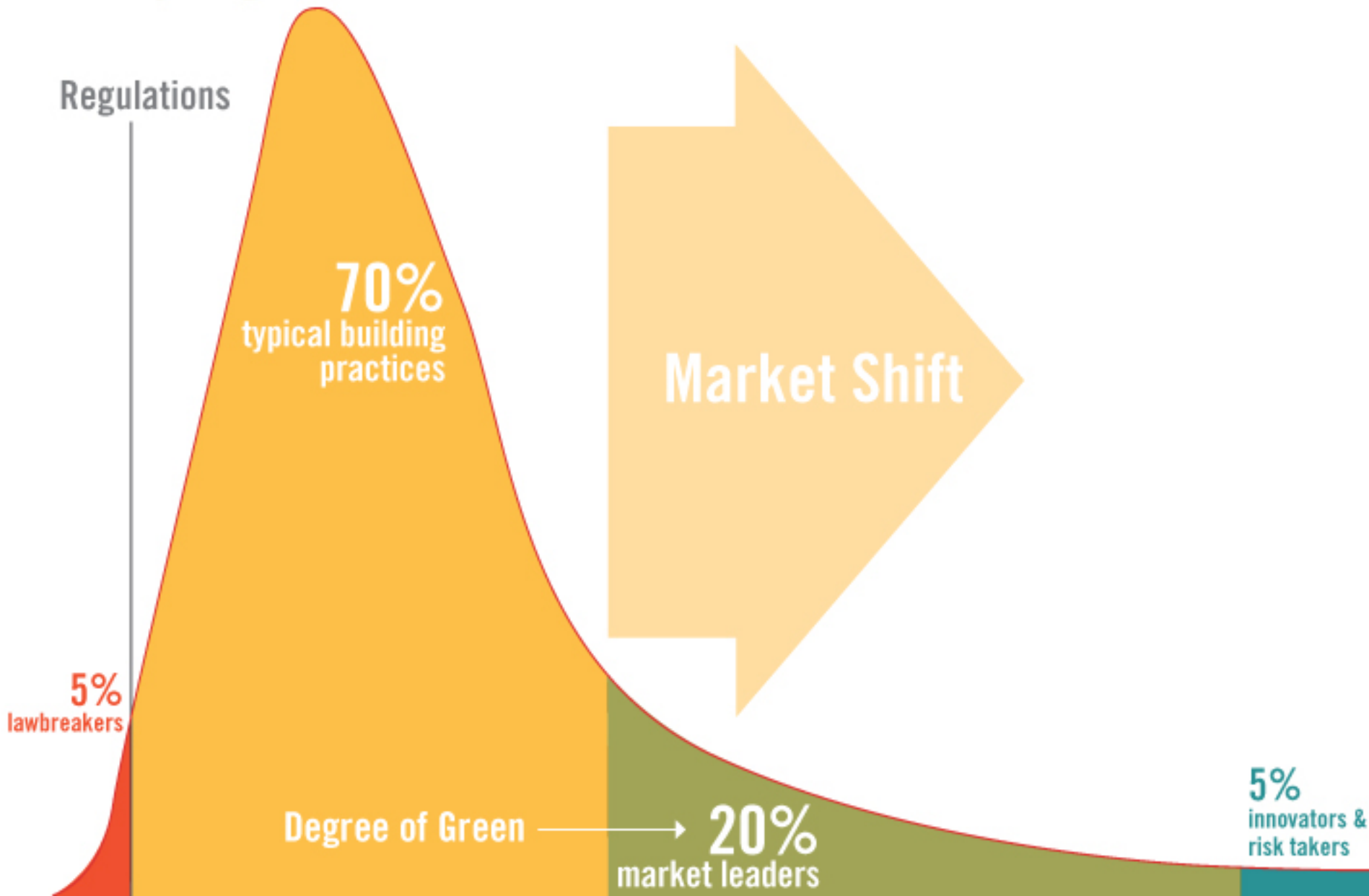


**United States Green Building Council**



**Leadership in Energy and Environmental Design**

# Varying Performance Levels



# POINT SYSTEM

Point Minimum: 45

Point Maximum: 136



Point levels: 45

60

75

90

# DOCUMENTS



for Homes

## LEED for Homes Project Checklist

Builder Name:	Habitat for Humanity
Project Team Leader:	Paul Murphy, Habitat for Humanity
Home Address (Street/City/State):	6601 N 54th Ave, Glendale, AZ

### Project Description

Building Type: **Single detached**

# of Bedrooms: **3**

Project type: **Affordable**

Floor Area: **1,325**

### Adjusted Certification Thresholds

Certified: **35.5**      Gold: **65.5**

Silver: **50.5**      Platinum: **80.5**

<b>Project Point Total</b>	<b>Final Credit Category Point Totals</b>			
Prelim: 86 + 1 maybe pts      Final: 9	ID: 0	SS: 9	EA: 0	EQ: 0
<b>Certification Level</b>	LL: 0	WE: 0	MR: 0	AE: 0
Prelim: Platinum      Final: Not Certified	<i>Minimum Point Thresholds Not Met for Final Rating</i>			

date last updated :

last updated by :

**Max Pts.      Preliminary Rating**

**Available      Y / Pts      Maybe      No**

**Notes**

**Project**

**Points**

<b>Innovation &amp; Design Process (ID)</b> (Minimum 0 ID Points Required)	<b>Max: 11</b>	<b>Y:6</b>	<b>M:0</b>	<b>Final: 0</b>
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1. Integrated Project Planning				
1.1 Preliminary Rating	<i>Prereq.</i>			
Target performance tier: <input type="text" value="Platinum"/>				
1.2 Integrated Project Team ( <i>meet all of the following</i> )	<b>1</b>	<b>1</b>	<b>0</b>	<b>0</b>
<input checked="" type="checkbox"/> a) Individuals or organizations with necessary capabilities			<input checked="" type="checkbox"/> c) Regular meetings held with project team	
<input checked="" type="checkbox"/> b) All team members involved in various project phases				
1.3 Professional Credentialed with Respect to LEED for Homes	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>
1.4 Design Charrette	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>
1.5 Building Orientation for Solar Design ( <i>meet all of the following</i> )	<b>1</b>	<b>1</b>	<b>0</b>	<b>0</b>
<input checked="" type="checkbox"/> a) Glazing area on north/south walls 50% greater than on east/west walls			<input checked="" type="checkbox"/> c) At least 450 sq. ft. of south-facing roof area, oriented for solar applications	
<input checked="" type="checkbox"/> b) East-west axis is within 15 degrees of due east-west			<input checked="" type="checkbox"/> d) 90% of south-facing glazing is shaded in summer, unshaded in winter	



# LEED FOR HOMES

REFERENCE GUIDE FIRST EDITION 2008



# PARTIES INVOLVED

**USGBC**

**Provider:** Sonoran LEED LLC

**Green Raters:** Energy Inspectors

**Developer:** Habitat for Humanity,  
Central Arizona

**Project Team:** Landscape Designers  
Architect  
LEED Accredited Professionals  
USGBC Representative  
Construction Supervisors

# CERTIFICATION PROCESS

Register project with local Provider

Create Project Team

Preliminary Checklist

Research

Update Checklist

Implementation & Documentation

Inspections

Certification

# How Does LEED Define a Green Home?



# WHAT THIS MEANS FOR US...

## ENERGY

- Enhanced insulation package
- Reduce envelope leakage
  - Caulk all seams in exterior wall
  - Spray foam all penetrations
- Enhanced windows
- Size calculations for HVAC
- High SEER condenser
- CFL bulbs and EnergyStar rated fixtures
- EnergyStar appliances
- PV panel
- Solar water heater

# WHAT THIS MEANS FOR US...

## WATER

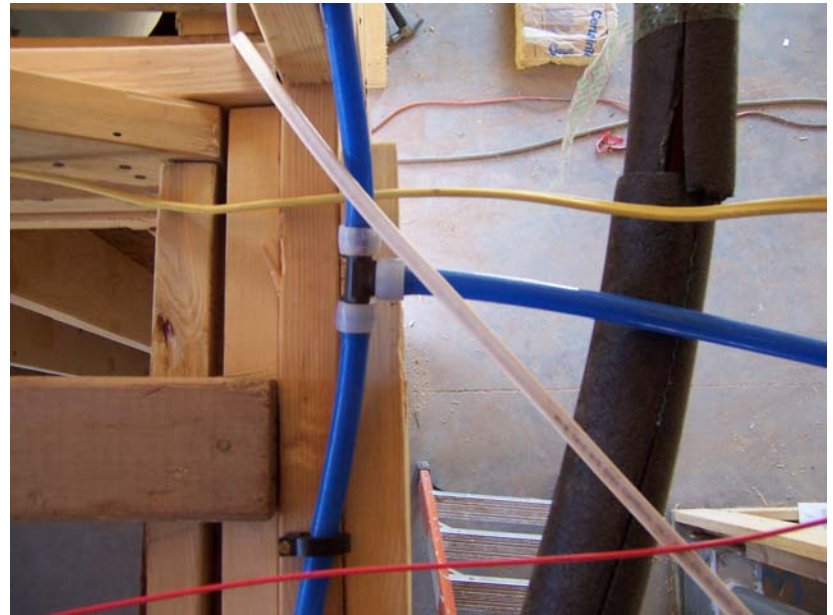
- Drought tolerant plants
- No turf
- Site water management
  - Gutters
  - Sloped hard surfaces
  - Swales
- Drip Irrigation
- Graywater reuse system



# WHAT THIS MEANS FOR US...

## WATER

- Low flow faucets, shower heads, and toilets
- On demand recirculation pump
- Hot water pipe insulation



# WHAT THIS MEANS FOR US...

## INDOOR AIR QUALITY

- Enhanced exhaust fans (bathrooms and garage)

# WHAT THIS MEANS FOR US...

## INDOOR AIR QUALITY

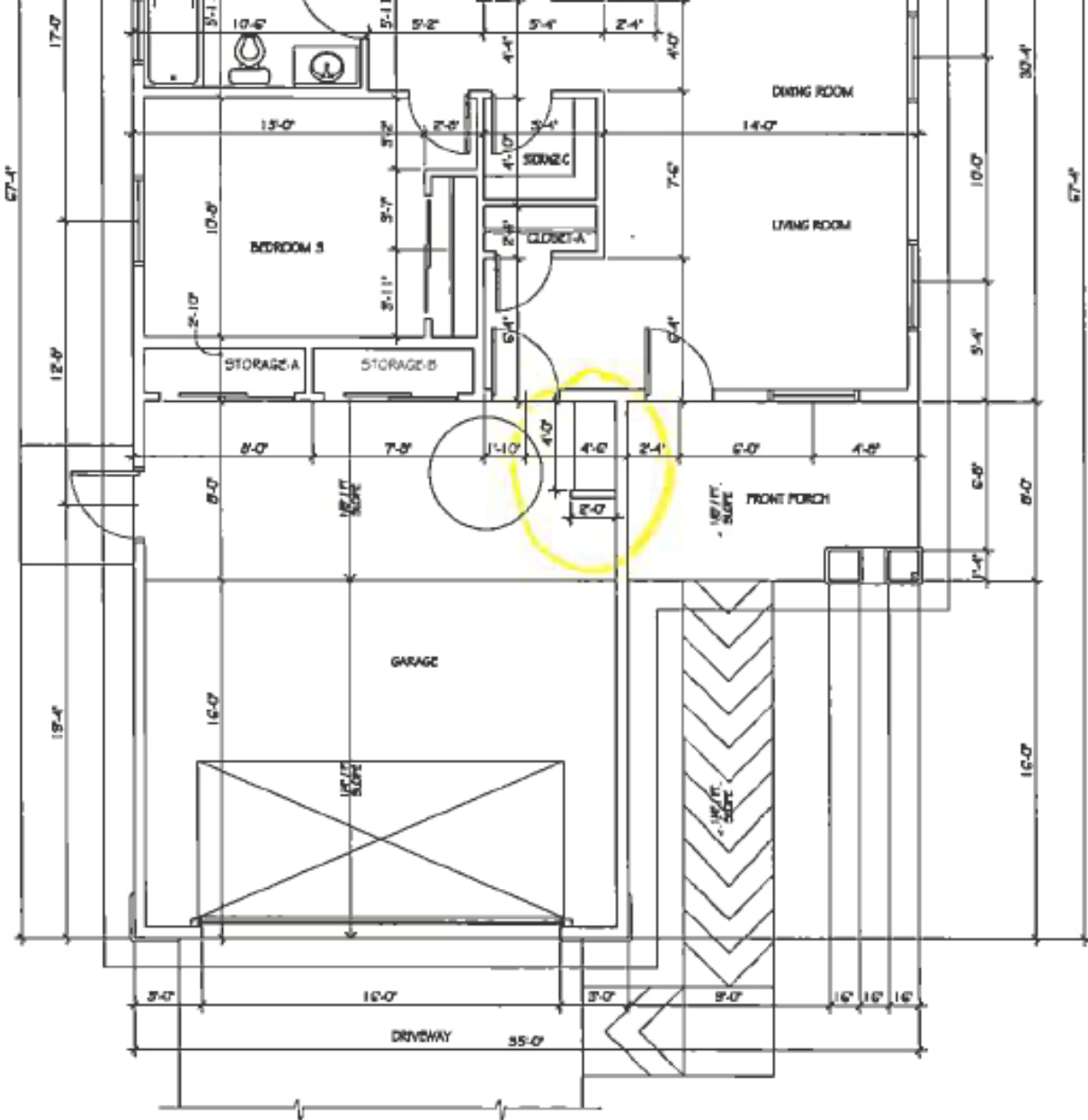
- Enhanced exhaust fans (bathrooms and garage)
- Seal AC ducts throughout construction



# WHAT THIS MEANS FOR US...

## INDOOR AIR QUALITY

- Enhanced exhaust fans (bathrooms and garage)
- Seal AC ducts throughout construction
- Shoe removal area



# FLOOR PLAN (DIMENSIONED)

SCALE: 1/4" = 1'-0"



# WHAT THIS MEANS FOR US...

## INDOOR AIR QUALITY

- Enhanced exhaust fans (bathrooms and garage)
- Seal AC ducts throughout construction
- Shoe removal area
- Preoccupancy flush

# WHAT THIS MEANS FOR US...

## INDOOR AIR QUALITY

- Enhanced exhaust fans (bathrooms and garage)
- Seal AC ducts throughout construction
- Shoe removal area
- Preoccupancy flush
- Detached garage

# WHAT THIS MEANS FOR US...

## INDOOR AIR QUALITY

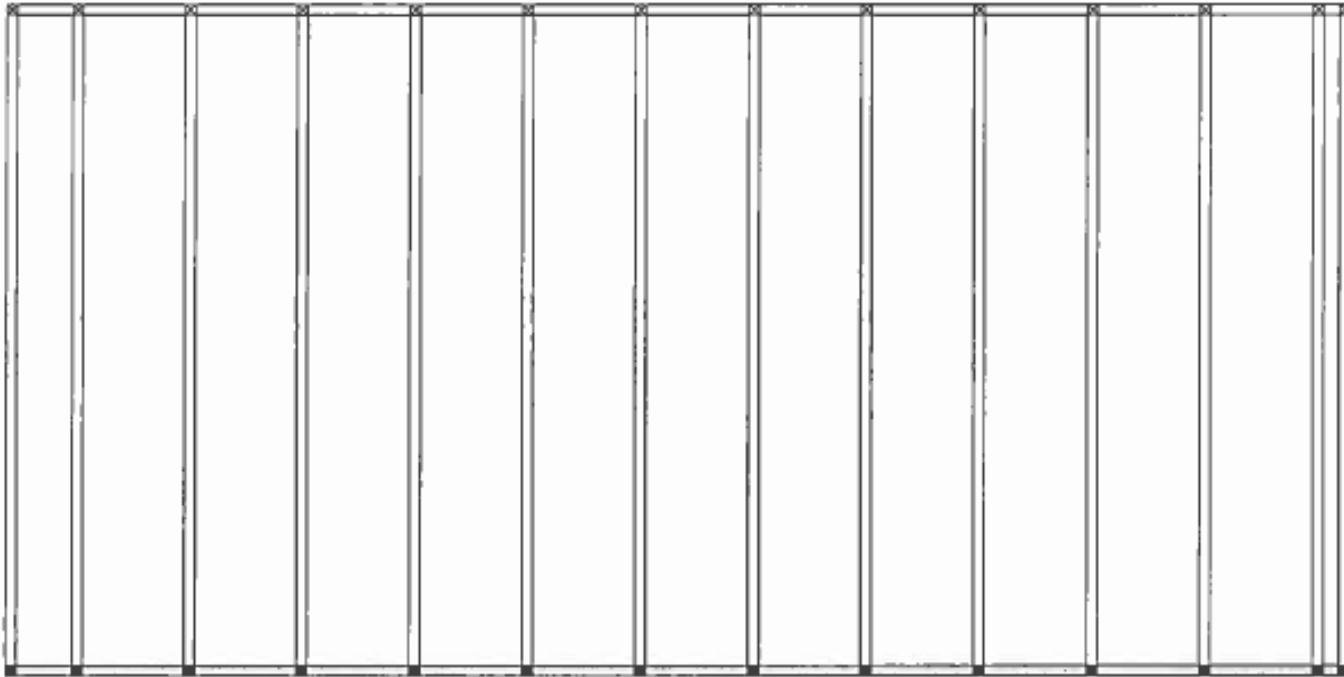
- Enhanced exhaust fans (bathrooms and garage)
- Seal AC ducts throughout construction
- Shoe removal area
- Preoccupancy flush
- Detached garage
- CO2 detector next to garage

# WHAT THIS MEANS FOR US...

## MATERIALS

- Detailed framing documents

1 →



<b>1</b>	MODEL: MT35-3	CUTLIST		
		TYPE	LENGTH	QUANTITY
	WALL DETAIL: 1	STUDS	82 1/2"	14
		TRIMMERS	_____	_____
	SCALE: 3/16" = 1'-0"	HEADERS	_____	_____
		CRIPPLES	_____	_____
SILL		_____	_____	

# WHAT THIS MEANS FOR US...

## MATERIALS

- Detailed framing documents
- Precut lumber package

# WHAT THIS MEANS FOR US...

## MATERIALS

- Detailed framing documents
- Precut lumber package
- Ladder blocking, 2-stud corners, 24" truss spacing

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# WHAT THIS MEANS FOR US...

## MATERIALS

- Detailed framing documents
- Precut lumber package
- Ladder blocking, 2-stud corners, 24" truss spacing
- Off-site fabrication
- Document local production (drywall and aggregate)

# WHAT THIS MEANS FOR US...

## MATERIALS

- Detailed framing documents
- Precut lumber package
- Ladder blocking, 2-stud corners, 24" truss spacing
- Off-site fabrication
- Document local production (drywall and aggregate)
- Recycling

# WHAT THIS MEANS FOR US...

SITES

# WHAT THIS MEANS FOR US...

## SITES

- Documenting local resources

RESOURCE LOCATIONS

RESOURCE DETAILS



.25 mile radius

- 1. Glendale Community Center
- 2. Isaac E. Imes Magnet School
- 3. Post Office
- 4. Westy Motorsports
- 5. RV sales
- 6. Ibarra's Mufflers and Repair
- 7. Chevy Service Center
- 8. Inglesia Bautista Hispanico

.5 mile radius

- 1. Glendale Family Health Center
- 2. Motor Vehicles
- 3. Dollar General
- 4. Binding Pros
- 5. Carroll's Foreign Car
- 6. Santa Barbara Upholstery Supplies
- 7. 99 Cents Store
- 8. Day Care Center
- 9. Jack in the Box
- 10. Church's Chicken
- 11. Pentecostal Church of God
- 12. Glendale Police Museum
- 13. Latin American Assembly of God
- 14. Coin Laundry

Transportation

- Line 70
- Glendale Urban Shuttle

Open Space

- 1. Clavelito Park
- 2. El Barrio Park

# WHAT THIS MEANS FOR US...

## SITES

- Documenting local resources
- Compact development encouraged

# WHAT THIS MEANS FOR US...

## SITES

- Documenting local resources
- Compact development encouraged
- Document preexisting resources on site

# WHAT THIS MEANS FOR US...

## SITES

- Documenting local resources
- Compact development encouraged
- Document preexisting resources on site
- Site disturbance and landscape plan



# INERT

- concrete block
- brick
- rock
- cement
- stucco

# DRYWALL

- clean drywall (any kind)
- painted drywall
- drywall with nails or screws

# WOOD

- clean wood
- wood with nails or screws
- painted wood
- treated wood
- OSB
- plywood

# COMMINGLED

- PAPER

- cardboard
- paper lunch products
- tar paper

- PLASTIC

- plastic bottles
- shrink wrap
- hard opaque plastics

- METAL

- aluminum cans
- hardware
- scrap metal

**THANK YOU**

