

# RESIDENTIAL CONSTRUCTION FROM THE GROUND UP



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COURSE CONTENT © 2020 LINDA OLSON

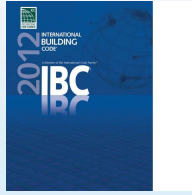
## COURSE OBJECTIVES:

- Apply knowledge of building codes and processes prior to construction
- Describe important features to evaluate during site selection
- Illustrate how to design and layout the house to take advantage of natural site conditions
- Explain the function of a topographical survey
- Assess environmental issues associated with a property to see how they may affect construction
- Identify and analyze construction documents

## COURSE OBJECTIVES

- Demonstrate an ability to identify and discuss external structural components of a home
- Demonstrate an ability to identify and discuss internal components of a home
- Recognize various types of roofs and windows used in the construction of a home
- Describe the function of insulation and how it is rated
- Explain how plumbing, HVAC and electrical components of a home work
- Recognize all of the features completed during the finishing of a structure

## BUILDING CODES




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## SITE SELECTION

- Infrastructure
- Zoning
- History
- Infill
- Topography

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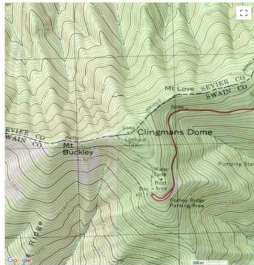
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Clingmans Dome Topo Map in Sevier County Tennessee




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## SITE SELECTION

- Infrastructure
- Zoning
- History
- Infill
- Topography
- Soils and Drainage
- Environmental
- Miscellaneous

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## DESIGN AND CONSTRUCTION

- Building Permits



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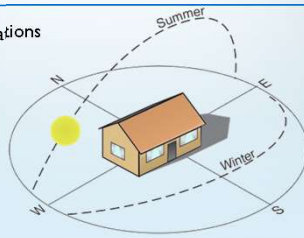
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## DESIGN AND CONSTRUCTION

- Design considerations



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## DESIGN AND CONSTRUCTION

### • Site Plans




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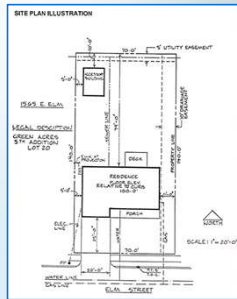
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## IDENTIFY THE FOLLOWING

- Direction of North: \_\_\_\_\_
- Scale: \_\_\_\_\_
- Finished floor elevation: \_\_\_\_\_
- Top of curb: \_\_\_\_\_
- Lot dimensions: \_\_\_\_\_
- East side setback: \_\_\_\_\_
- West side setback: \_\_\_\_\_
- Distance of house from front of property: \_\_\_\_\_
- Distance of house from rear of property: \_\_\_\_\_
- Width of drainage easement: \_\_\_\_\_
- Width of driveway: \_\_\_\_\_




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## DESIGN AND CONSTRUCTION

### • Construction Plans




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## DESIGN AND CONSTRUCTION

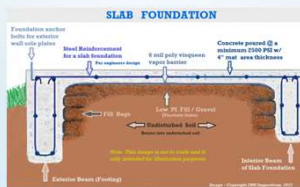
CONSTRUCTION PROJECT - SPECIFICATION SHEET		Project Name: _____
		Client Name: _____
		Contract No: _____
		Project Location: _____
		Project Start Date: _____
		Project End Date: _____
		Project Manager: _____
		Project Engineer: _____
		Project Architect: _____
		Project Contractor: _____
		Project Subcontractor: _____
		Project Supplier: _____
		Project Material: _____
		Project Labor: _____
		Project Equipment: _____
		Project Safety: _____
		Project Quality: _____
		Project Cost: _____
		Project Risk: _____
		Project Schedule: _____
		Project Budget: _____
		Project Status: _____
		Project Notes: _____
		Project Comments: _____
		Project Signatures: _____
		Project Date: _____

### • Specifications

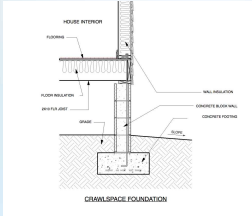
## STRUCTURAL COMPONENTS OF A HOUSE

## FOUNDATION

### • Slab



## FOUNDATION



- Crawl Space

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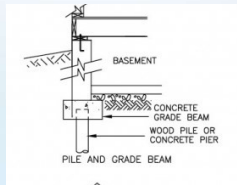
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## FOUNDATION

- Basement




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## FOUNDATION



- Pilings

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## EXTERIOR WALLS



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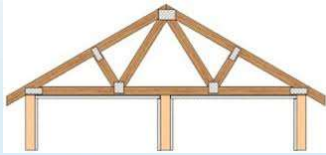
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## ROOF SYSTEM

- Trusses



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## ROOF SYSTEM

- Sheathing/Underlayment



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## ROOF SYSTEM

- Roof or Attic Ventilation



## ROOF SYSTEM

- Flashing



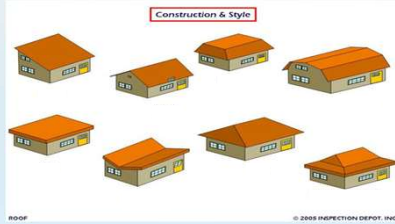
## ROOF SYSTEM

- Finish





## WHAT'S MY ROOF LINE?



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## INTERIOR FRAMING



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## WINDOWS

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## WHAT IS MY WINDOW?




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## PLUMBING, HVAC AND ELECTRICAL SYSTEMS

**Measures of Efficiency**

**AFUE** = efficiency of a gas furnace

Annual Fuel Utilization Efficiency (AFUE) = a rating which takes into consideration losses from pilot lights, start-up and stopping

**HSPF**

Heating Seasonal Performance Factor

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## PLUMBING




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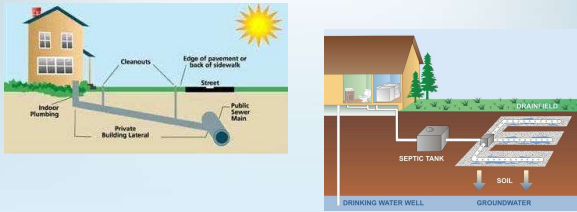
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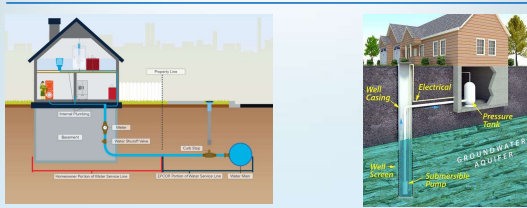
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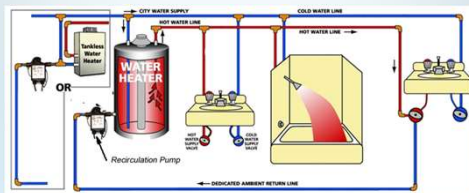
## PLUMBING – SEWER AND SEPTIC



## PLUMBING – POTABLE WATER



## PLUMBING – HOT WATER SYSTEM



## HEATING, VENTILATION, AND AIR CONDITIONING




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## HVAC

### • Single package system



### • Split system



### • Ductless system

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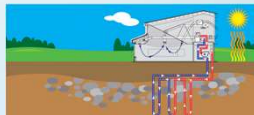
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## HVAC

### • Hybrid system



### • Geothermal heat pump




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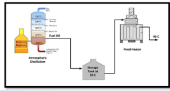
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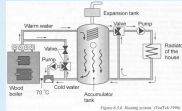
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## HEATING

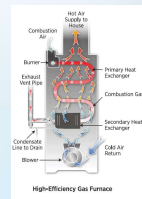
- Oil



- Wood



- Gas

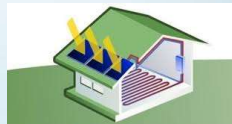


## HEATING

- Solar



- Radiant



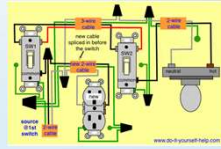
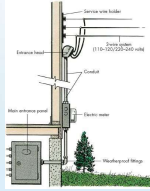
## HVAC COMPONENTS

- Thermostat
- Evaporator Coil
- Heat Exchanger
- Ducts
- Condenser Unit
- Furnace



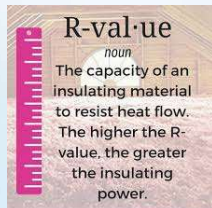
## ELECTRICAL SYSTEM

- Service Entrance
- Distribution Panel



- Circuitry

## INSULATION



## INSULATION



- Radiant Barrier



- Loose fill



- Blanket/Batt

## INSULATION

- Foam Plastic



- Rigid/Semi-Rigid Board



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## FINISHING

- Sheetrock



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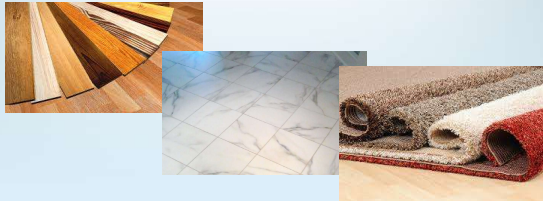
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## FINISHING

- Floors



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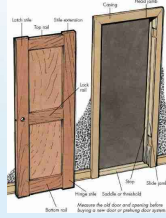
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## FINISHING

### • Doors



## FINISHING

### • Prep and Paint



## FINISHING

### • Landscaping





## FINISHING



- Cabinets

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## FINISHING

- Appliances




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## FINISHING

- Plumbing Trim-out




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## FINISHING

- Cleaning



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THANK YOU, NOW GO BUILD A HOUSE!



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