

DESIGN SUMMARY:

DESIGN OBJECTIVES:

1. Include passive solar heating design to minimize back-up heating requirements and indoor temperature fluctuations; use wood burning stoves for primary back-up and electric for secondary back-up heating
2. Include solar electric power with minimal back-up generation requirements
3. Include solar hot water heating for domestic use with electric back-up
4. Provide drinking and irrigation water through rainwater catchment, with minimal back-up through hauled water
5. Include natural day-lighting in all rooms to minimize lighting power requirements
6. Incorporate natural ventilation to cool the home in summer and fall
7. Incorporate make-up air systems to account for exhaust fans; incorporate fresh-air circulation systems to circulate heated air and ensure 20CFM air exchange per person in the tightly constructed building
8. Use sustainable materials and systems whenever possible
9. Target 2000 square feet of conditioned space, to include:
 - Views of Cataract Canyon to the Northeast, East and the San Francisco peaks to the Southeast from the living area(s)
 - A large open family/kitchen/dining area, with home theatre acoustics, minimal glare and a propane stove/oven
 - A master bedroom / bath on the same level as the kitchen/family room with wheel chair access to toilet and sinks
 - A quest bedroom
 - An office with a separate entrance
 - A wine/beer cellar with a stable low temperature
 - A deck with panoramic views and some protection from the wind and sun

RESULT:

We were able to achieve all of the Johnson's requirements in the final design, although the conditioned square feet came in at 2304 or about 15% over their target of 2000 square feet. However, the home will be smaller in size than a typical 3-bedroom home in Arizona.

Deadwood Ranch Passive Solar, Off-Grid Canyon Home

Conceptual Drawings

1st Floor:	754 sqft
2nd Floor:	1550 sqft
=====	
Total Conditioned:	2304 sqft

Garage:	807 sqft
Deck:	349 sqft
Covered Entry/Patio:	81 sqft
Cellar:	80 sqft
=====	
Total Other:	1317 sqft

ESTIMATED DESIGN TOTAL:	3621 sqft
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Sheet Title:
South Elevation

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Deawood Ranch Passive Solar, Off-grid Home
Williams, AZ
Nine miles west of Hwy 64, twenty-one miles north-northwest of Williams, AZ

Project: 2006-01
Designer: Thed Johnson
Date: 03/15/10

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7709 West Painted Rock Trail, Williams, AZ 86046



Sheet Title:
North Elevation

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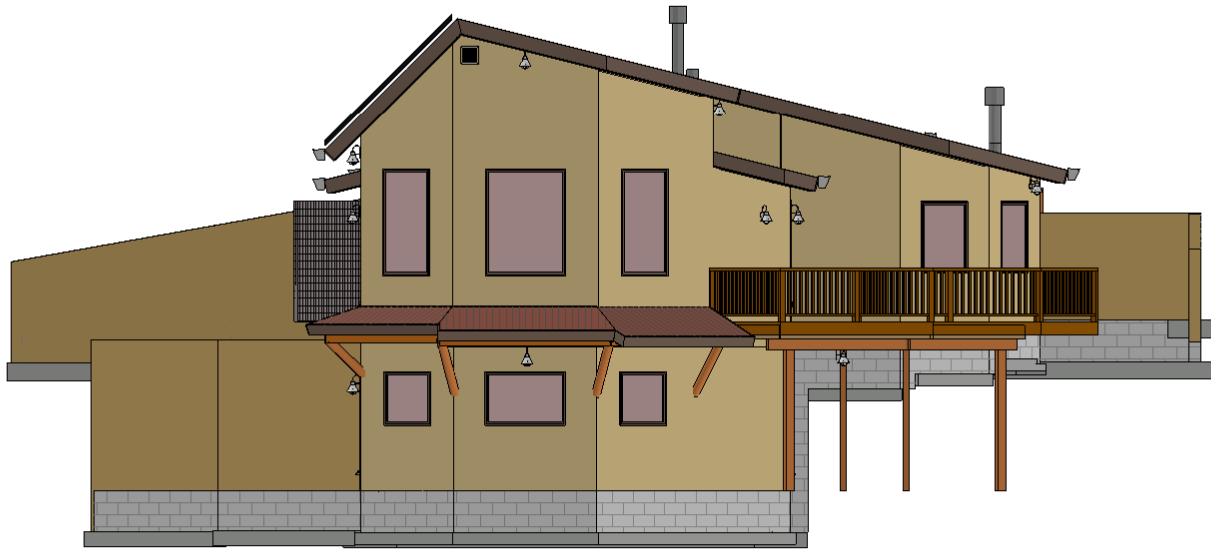
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Deawood Ranch Passive Solar, Off-grid Home
Williams, AZ
Nine miles west of Hwy 64, twenty-one miles north-northwest of Williams, AZ

Project: 2006-01

Designer: *Theo Johnson*
Date: *03/15/10*

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Sheet Title:

East Elevation

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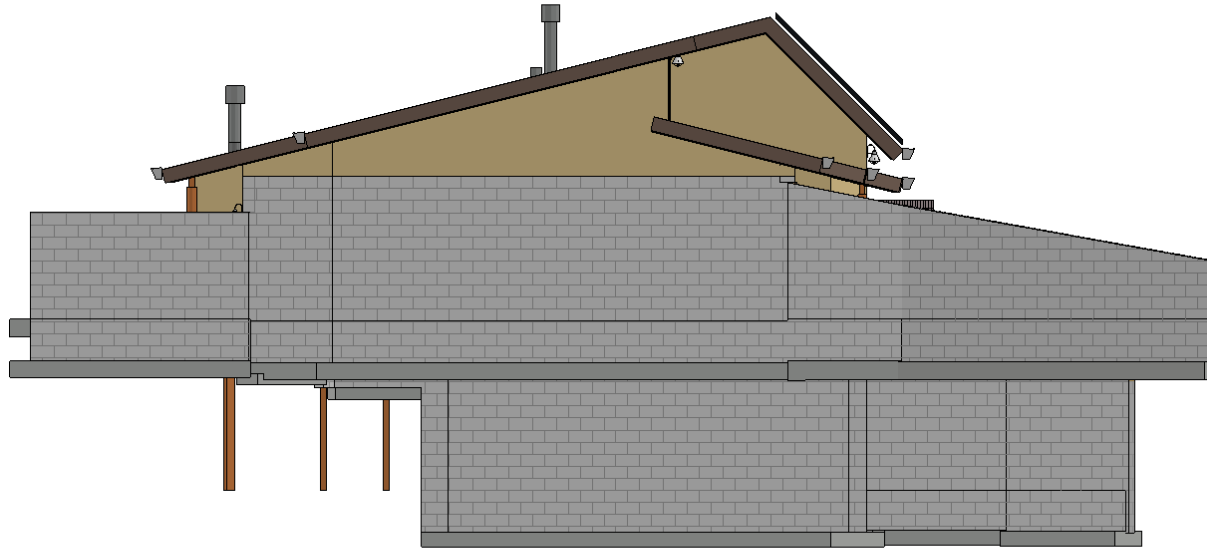
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Deawood Ranch Passive Solar, Off-grid Home
Williams, AZ
Nine miles west of Hwy 64, twenty-one miles north-northwest of Williams, AZ

Project: 2006-01

Designer: Thed Johnson
Date: 03/15/10

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Sheet Title:
West Elevation

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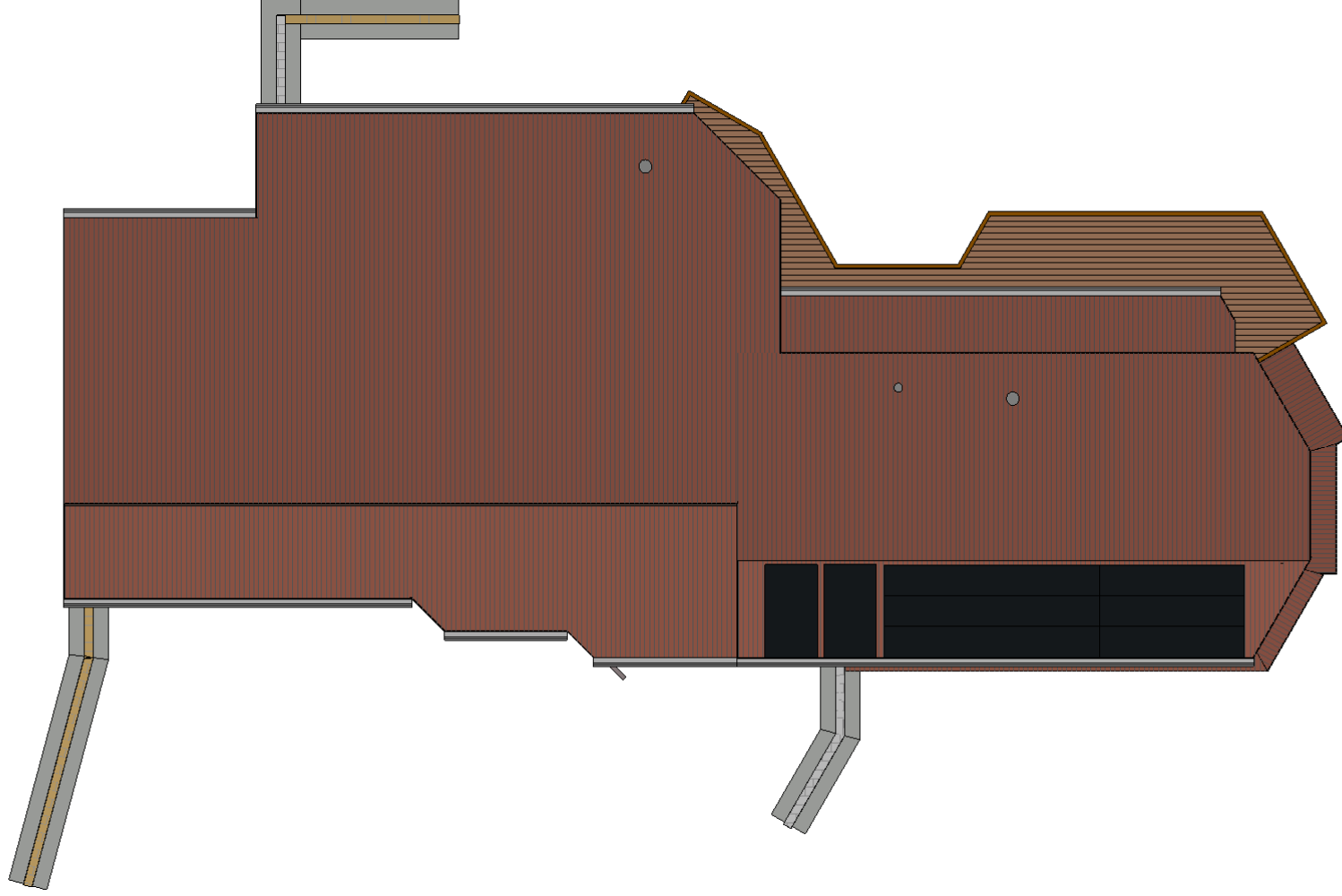
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Deawood Ranch Passive Solar, Off-grid Home
Williams, AZ
Nine miles west of Hwy 64, twenty-one miles north-northwest of Williams, AZ

Project: 2006-01
Designer: Thed Johnson
Date: 03/15/10

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Sheet Title:
Overhead View

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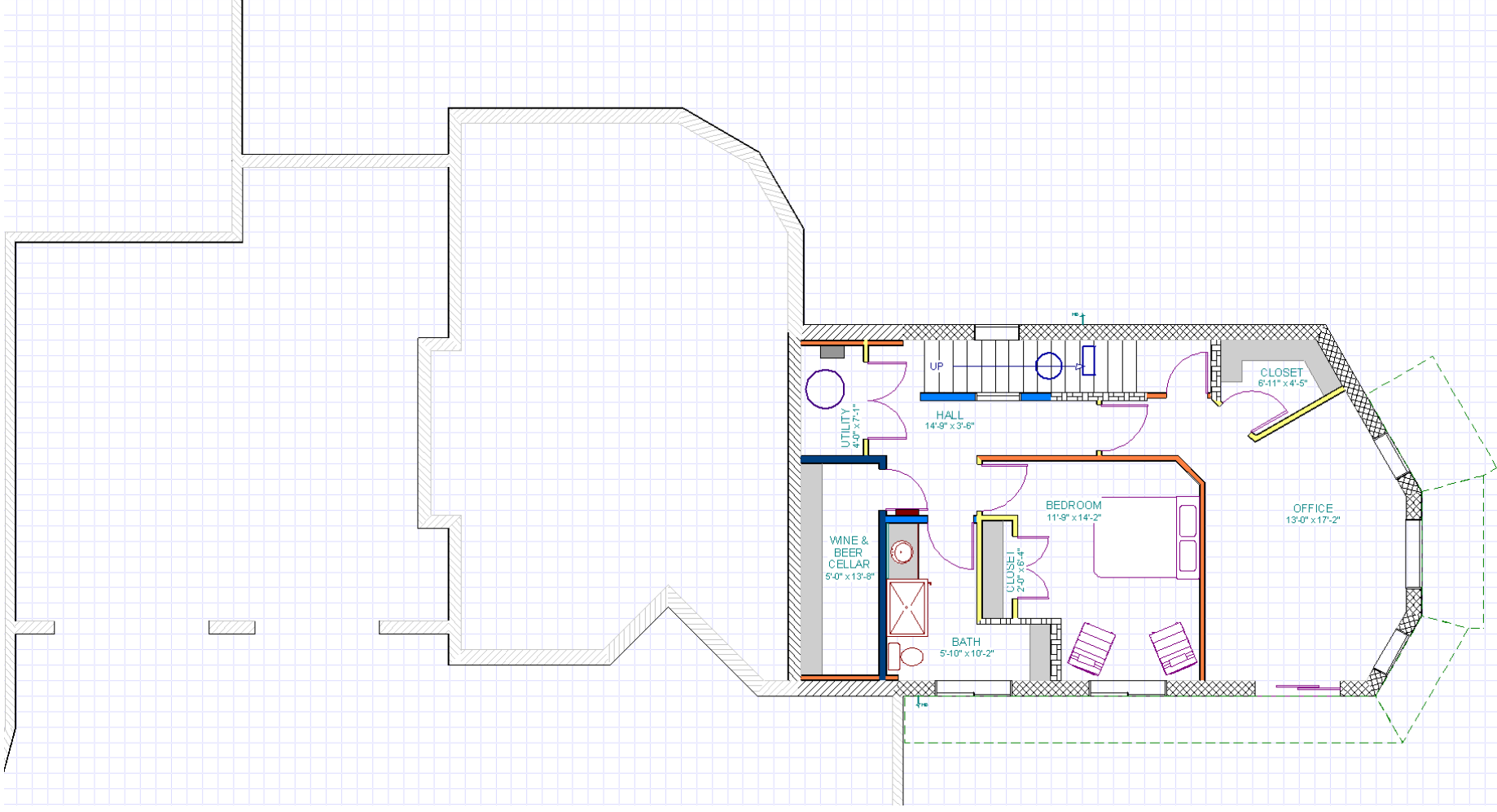
Deawood Ranch Passive Solar, Off-grid Home
Williams, AZ

Nine miles west of Hwy 64, twenty-one miles north-northwest of Williams, AZ

Project: 2006-01

Designer: Thad Johnson
Date: 03/15/10

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Sheet Title: *1st Level Floor Plan*

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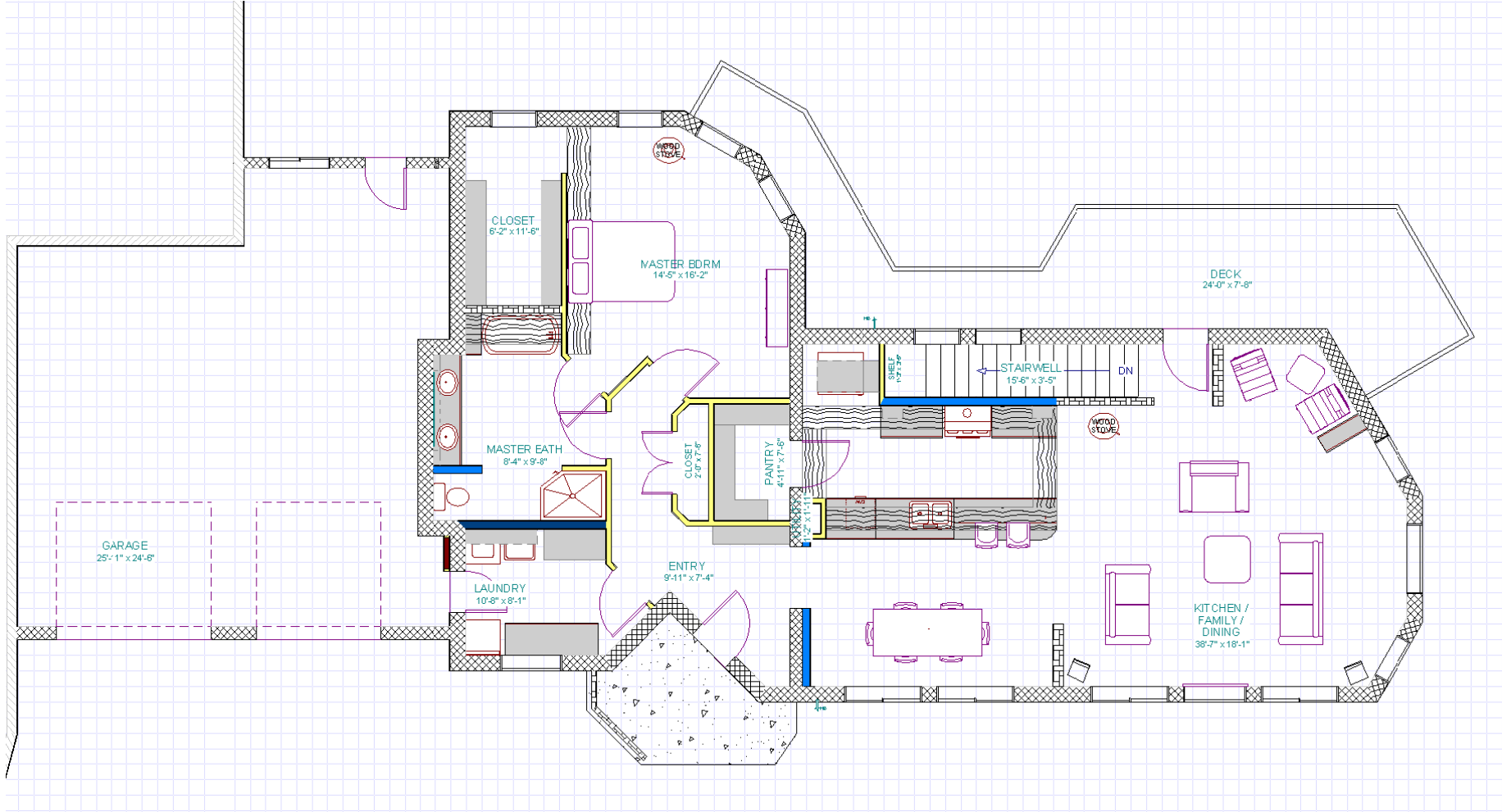


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 Nine miles west of Hwy 64, twenty-one miles north-northwest of Williams, AZ

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 Designer: Thed Johnson
 Date: 03/15/10

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Sheet Title:
2nd Level Floor Plan

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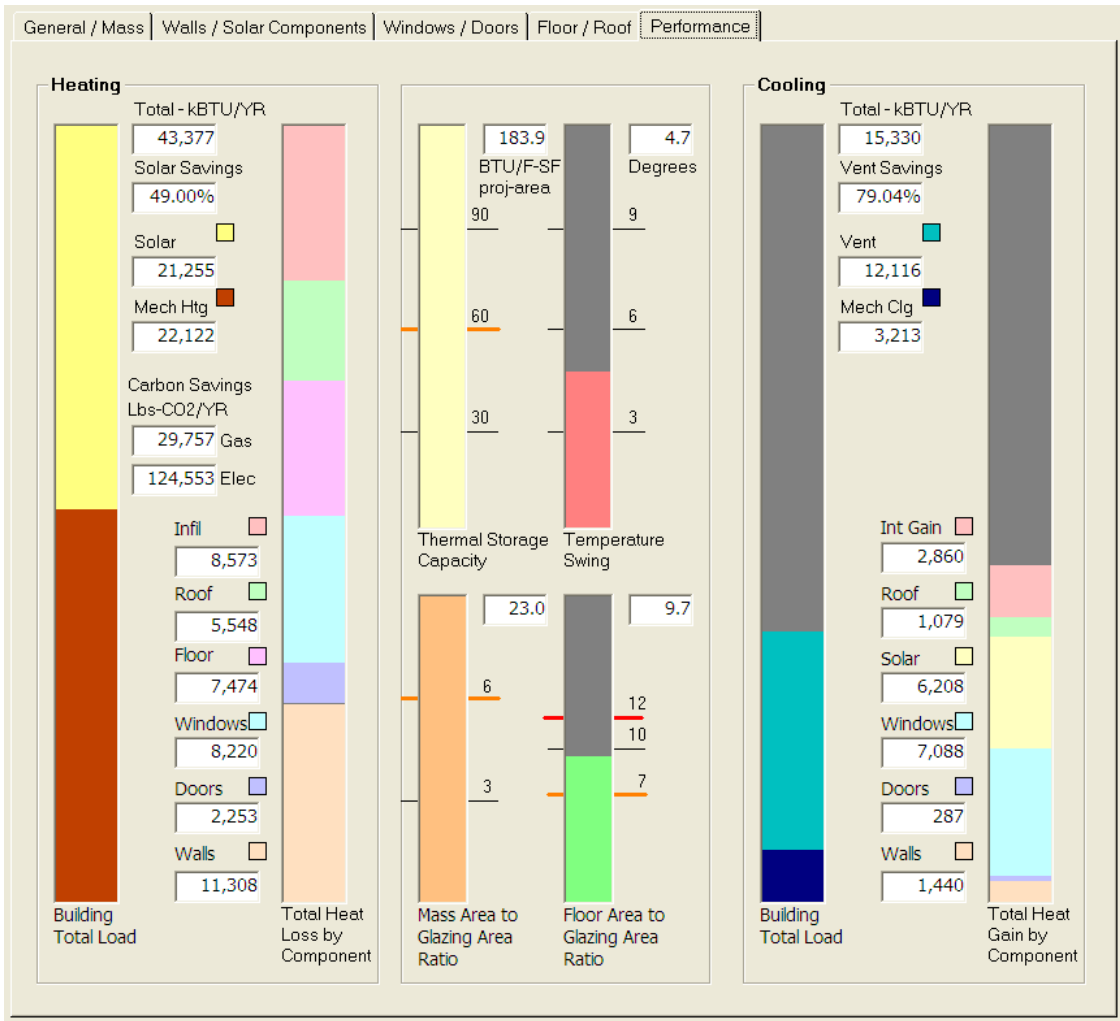


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