

DESIGN SUMMARY:

DESIGN OBJECTIVES:

1. Include passive solar heating design to minimize back-up heating requirements and indoor temperature fluctuations; use electric radiant heating for primary backup and wood burning stove for secondary back-up heating
2. Include solar electric power with minimal back-up generation requirements; solar electric system will provide power to electric water heater for domestic and radiant water heating.
3. Provide drinking and irrigation water through rainwater catchment and 15,000 gallon cistern, 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



Sheet Title:
South Elevation

Copyright 2008, SolarTerra LLC

Rev
D

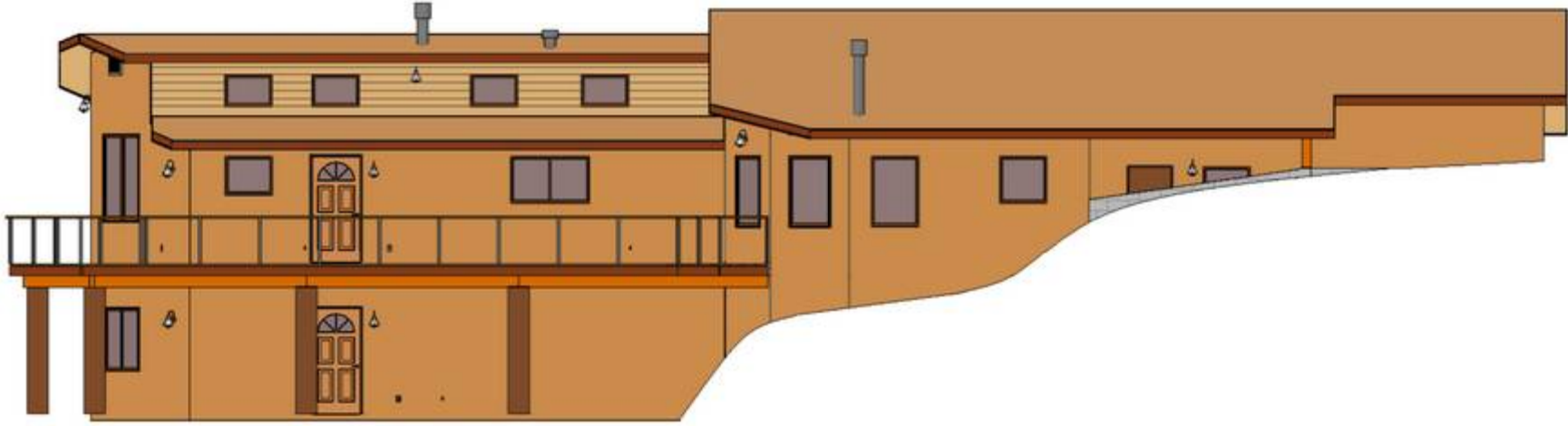
Deawood Ranch Passive Solar, Off-grid Home
Williams, AZ
Nine miles west of Hwy 64, twenty-one miles north-northwest of Williams, AZ

Project: 2006-01

Designer: Thea Johnson
Date: 03/15/10

SolarTerra
7709 West Painted Rock Trail, Williams, AZ 86046

Sheet
2



Sheet Title:
North Elevation

Copyright 2008, SolarTerra LLC

Rev
D

Sheet
3

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: Thea Johnson
Date: 03/15/10

SolarTerra
7709 West Painted Rock Trail, Williams, AZ 86046



Sheet Title:
East Elevation

Copyright 2008, SolarTerra LLC

Rev
D

Sheet
4

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

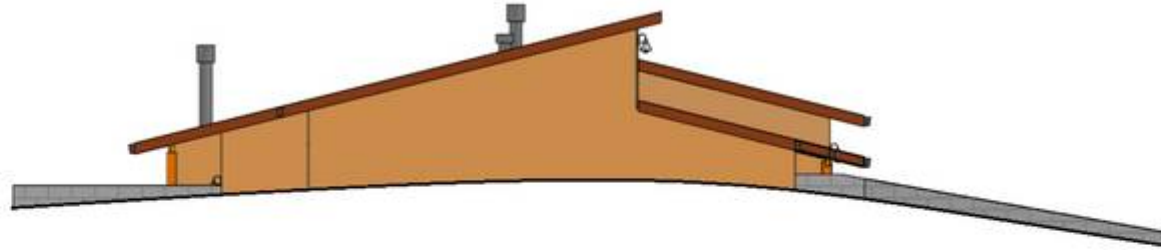
Project: 2006-01
Designer: Thea Johnson
Date: 03/15/10

SolarTerra
7709 West Painted Rock Trail, Williams, AZ 86046

Sheet Title:
West Elevation

Copyright 2008, SolarTerra LLC

Rev
D

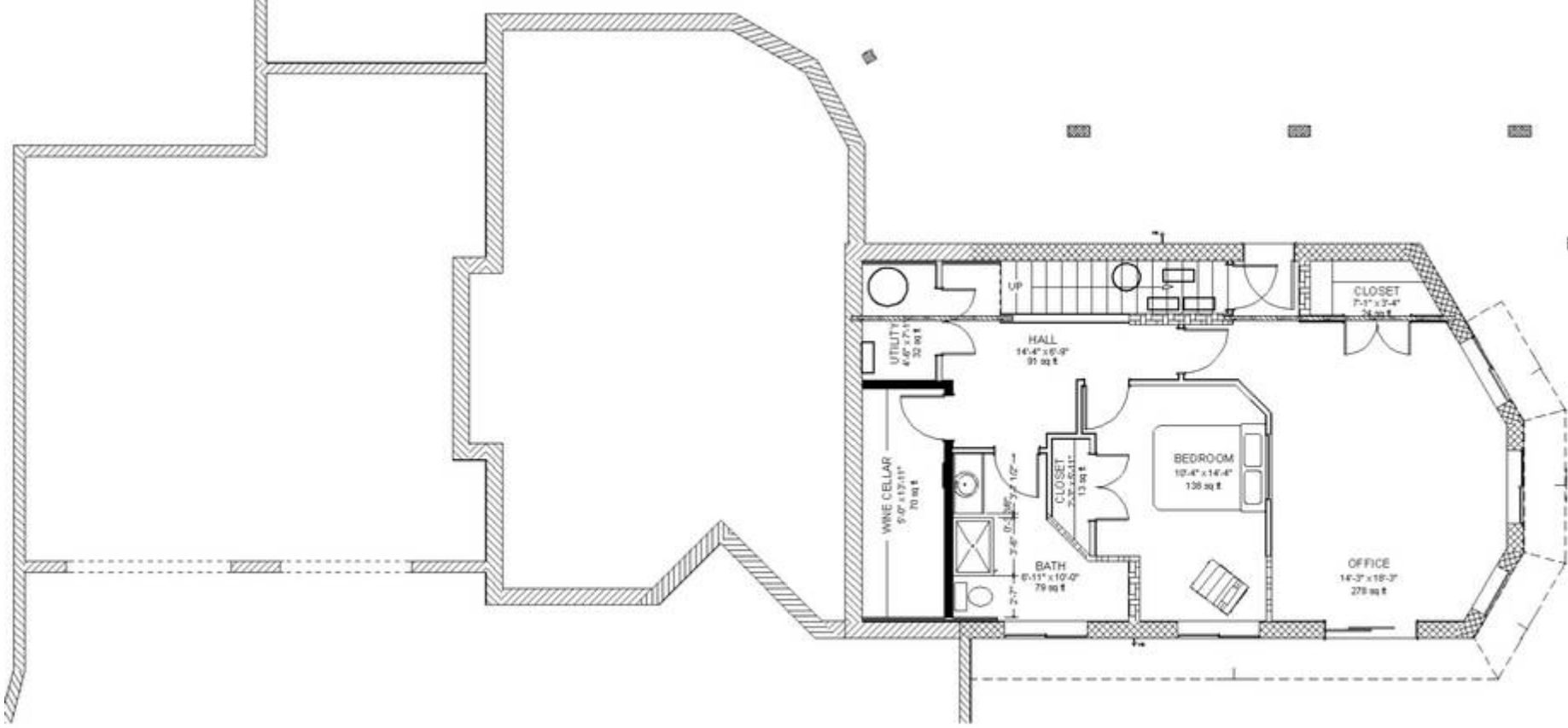


Sheet
S

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: Thea Johnson
Date: 03/15/10

SolarTerra
7709 West Painted Rock Trail, Williams, AZ 86046



Sheet Title:
1st Level Floor Plan

Copyright 2008, SolarTerra LLC

Rev
D

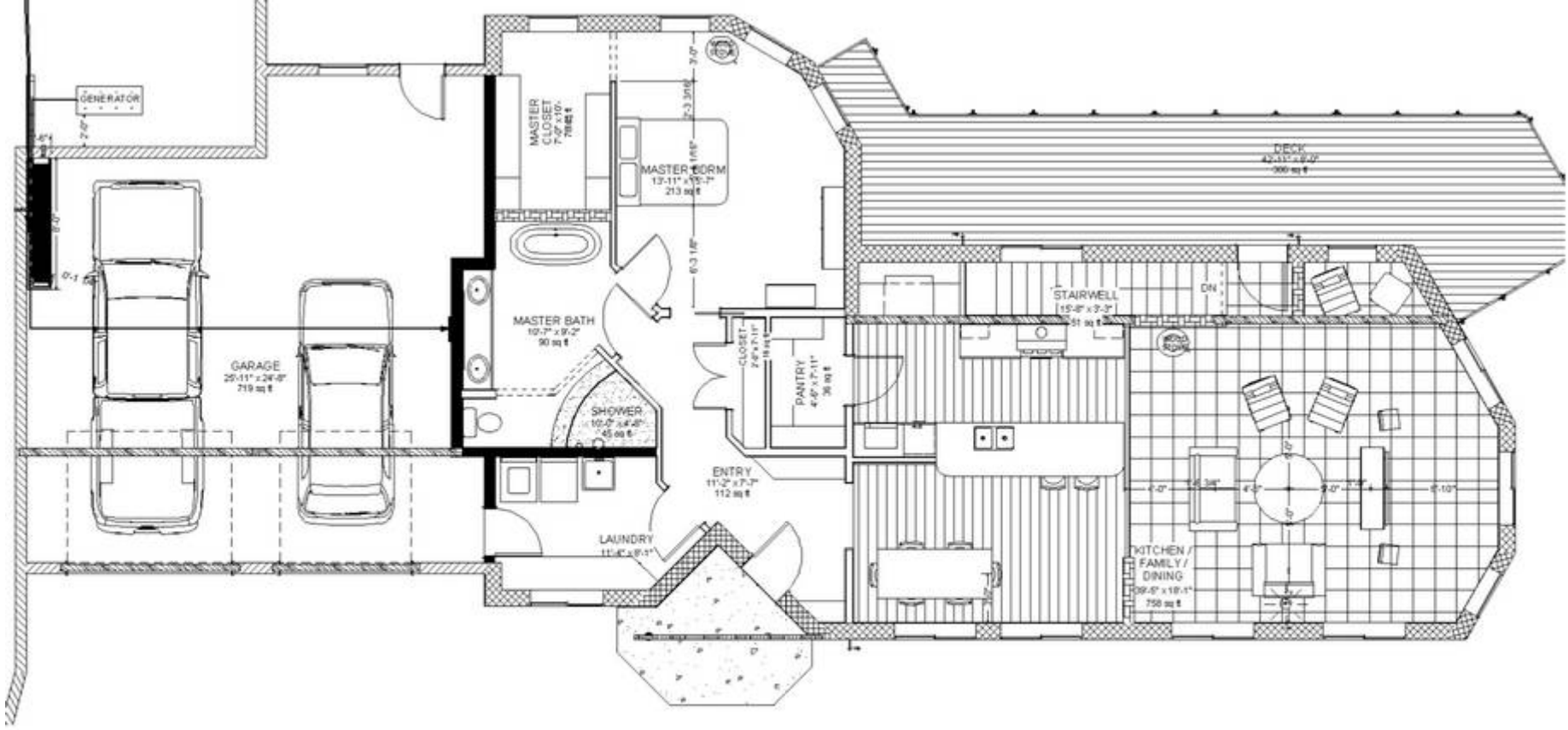


Sheet
6

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

SolarTerra
 7709 West Painted Rock Trail, Williams, AZ 86046



Sheet Title:
2nd Level Floor Plan

Copyright 2008, SolarTerra LLC

Rev
D



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

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

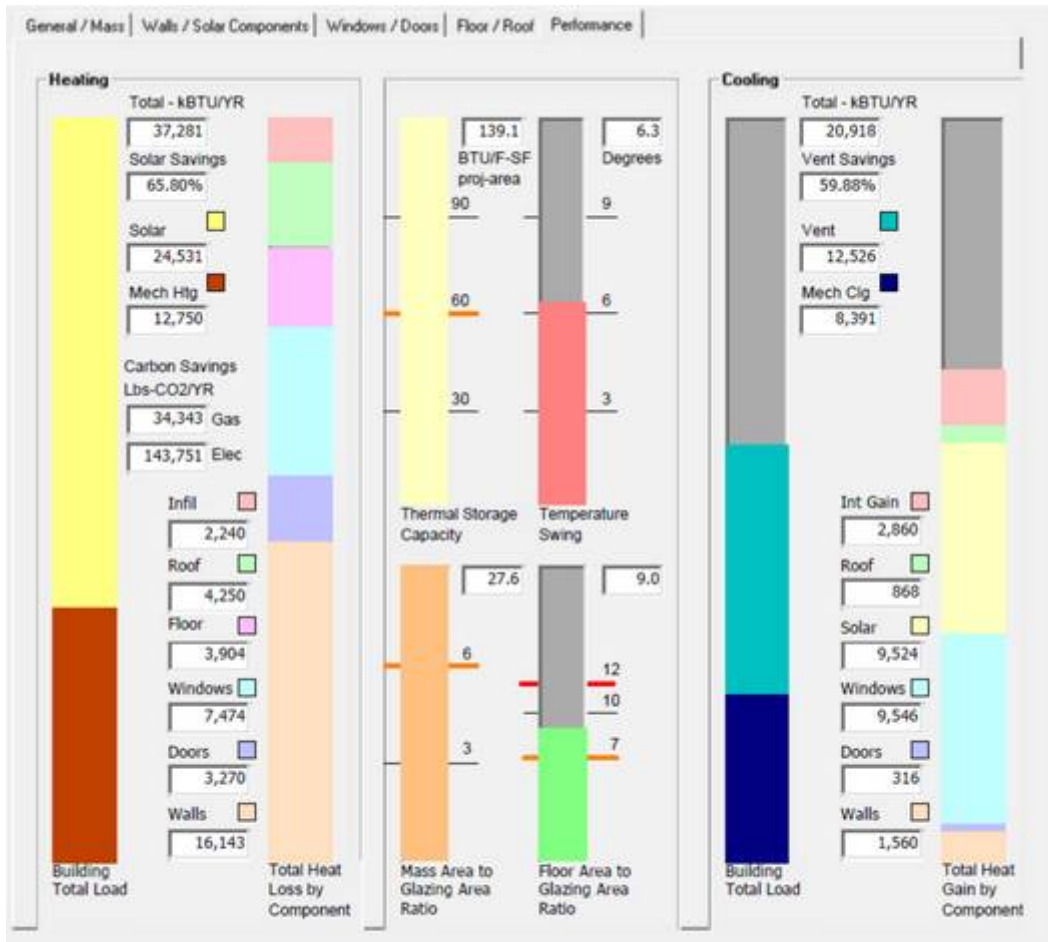
Project: 2006-01

Designer: Thed Johnson
 Date: 03/15/10



7709 West Painted Rock Trail, Williams, AZ 86046

Sheet
7



Solaequis Software