

Arch 464
ECS
Spring 2007

Name _____

Quiz #2

"On Rattlesnake Creek"

For this problem you are the water use consultant for James Brown, a San Diego-based architect. Brown wants this building to express the latest thinking in water conservation and water treatment to match his commitment to sustainable design expressed by his passive solar heating and natural ventilation schemes for the house.

Context. The site is near Missoula, MT, on a rural site on the banks of Rattlesnake Creek. There is a productive well on site that can supply about 200 gallons of potable water a day. Connecting to the city sewer system would be expensive and not in the spirit of sustainability. Hence the architect and client want to explore alternatives for waste water treatment. Neither architect nor client wants any of the stormwater that falls on the impervious surface of the proposed building and its site to runoff into Rattlesnake Creek. Missoula has a mild Montana climate, harsher than North Idaho, but with similar rainfall, about 25 inches per year. The house will have a heating system but will rely on natural ventilation and thermal mass for cooling.

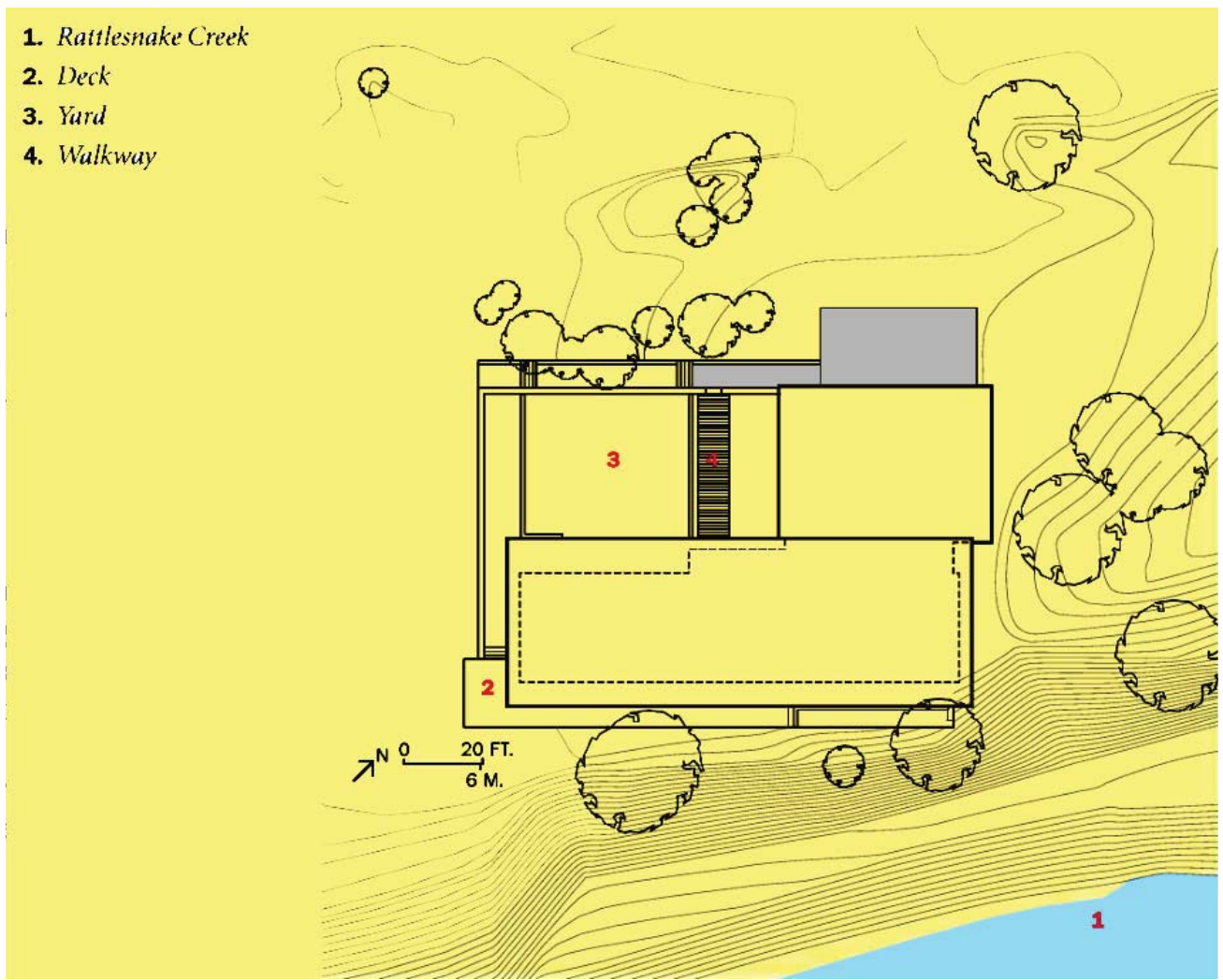
Description. This 3,600 square foot house, includes a finished basement. Concrete work on the site is limited to a deck on the southeast side, a small pad at the garage door, and a walk between the pad and the wooden entry walkway. The small building site adjacent to the creek allows no space for a traditional septic tank and leach field.



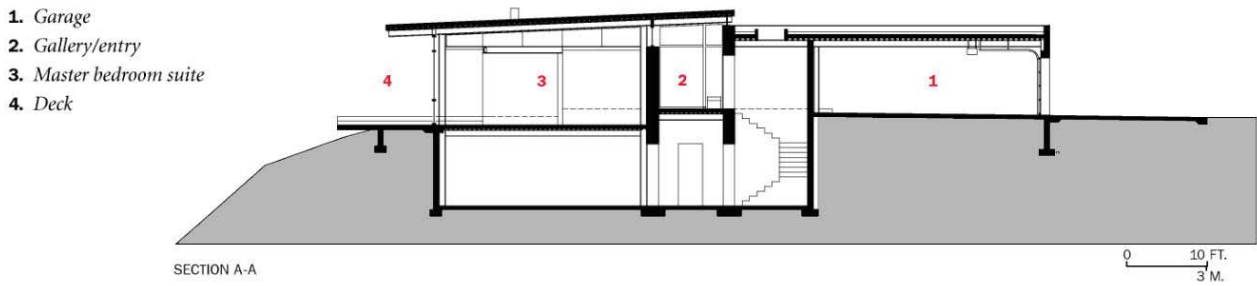
Renderings of Rankin Creek House from due south (top) and due north (bottom).

All images and drawings: Architectural Record 10:06.

READ THE ENTIRE QUIZ BEFORE YOU BEGIN!



Site and roof plan. Concrete pad and sidewalk in gray.



Section AA looking SW, see plan on page 4.

2 pts. 1. **Suggest and explain two** strategies for retaining stormwater on the site. **Indicate** how they would integrate with the building and its site in the plan and section on page 2.

3 pts. 2. **Propose and diagram three** strategies that will prevent water used in the building from being dumped untreated into Rattlesnake Creek. **Explain** each strategy.

1. Living room

2. Kitchen

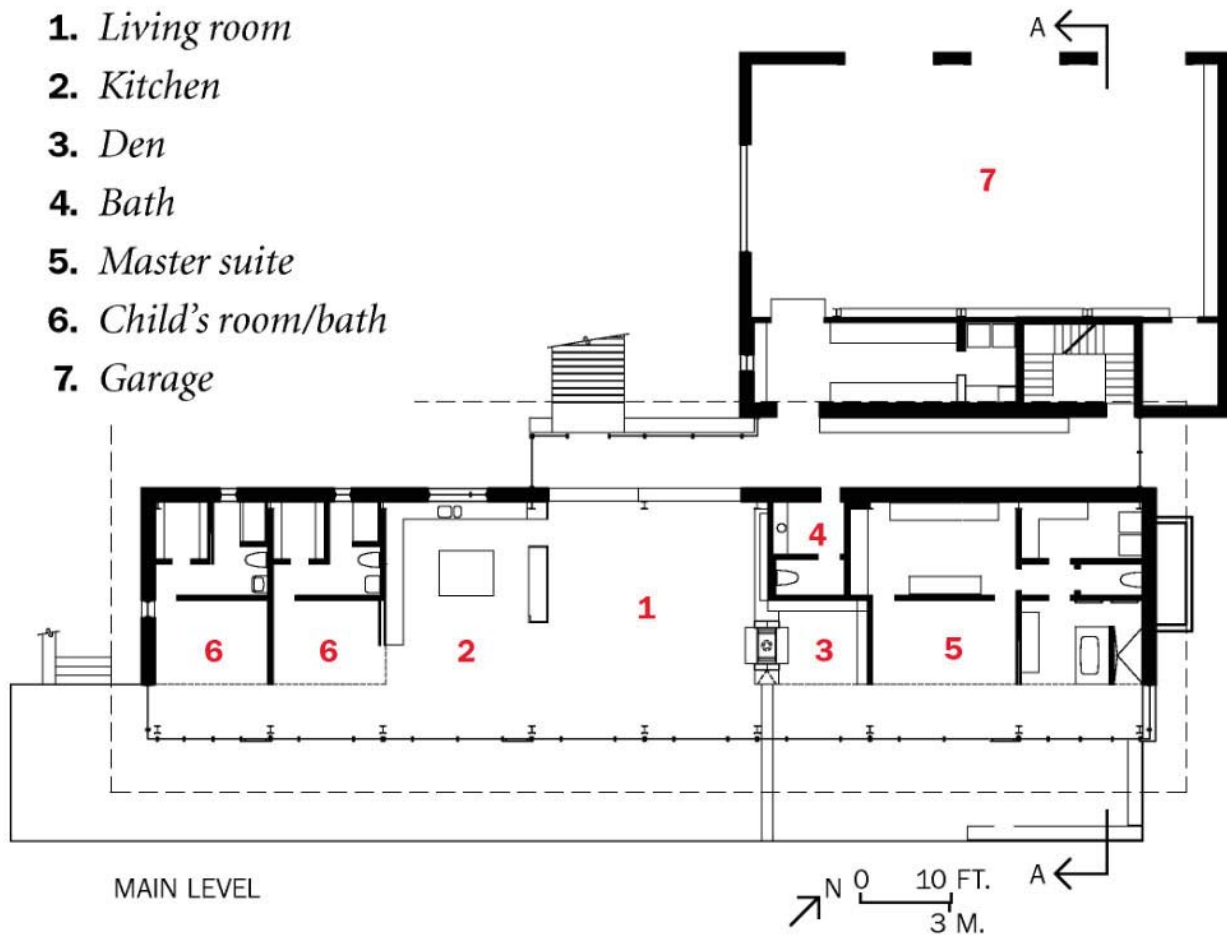
3. Den

4. Bath

5. Master suite

6. Child's room/bath

7. Garage



Rendering of view toward northeast of gallery from living room.

2 pts. 3. **Suggest** two strategies for reducing water use in the house. Indicate how they would be implemented and integrated in plan and/or section.

3 pts. 4. **Draw** a flow diagram that summarizes your plan for water use on this site—sources, uses, and disposal.