

Arch 463
ECS
Fall 98

Name _____

Quiz #4

"Glass Box in Paradise"

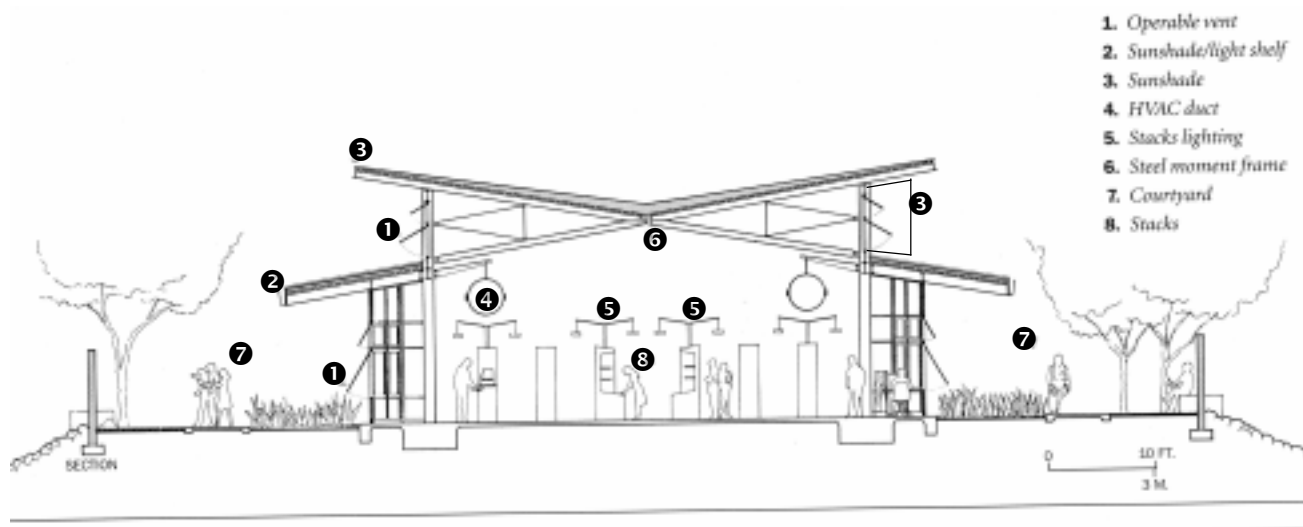
For this problem you are the architectural design critic for Environmental Building News. Your assignment is to appraise the passive design features of the Carmel Mountain Ranch Library in San Diego, California designed by the M. W. Steele Group, architects, with Ove Arup & Partners, structural, mechanical, and electrical consultants.

The December 1997 issue of *Architectural Record* reports, "Steele wanted to take advantage of San Diego's famously temperate climate so that the library users could feel free to go outside to read or gather to study'. While this goal might not seem extraordinary, given the region, Steele found that heavily air-conditioned interiors, in addition to librarians' security concerns, prevented most library courtyards from being used. To address these constraints, the architects placed the building in a walled garden—a decision, Steele says, that set them 'down the path of doing a glass building.'

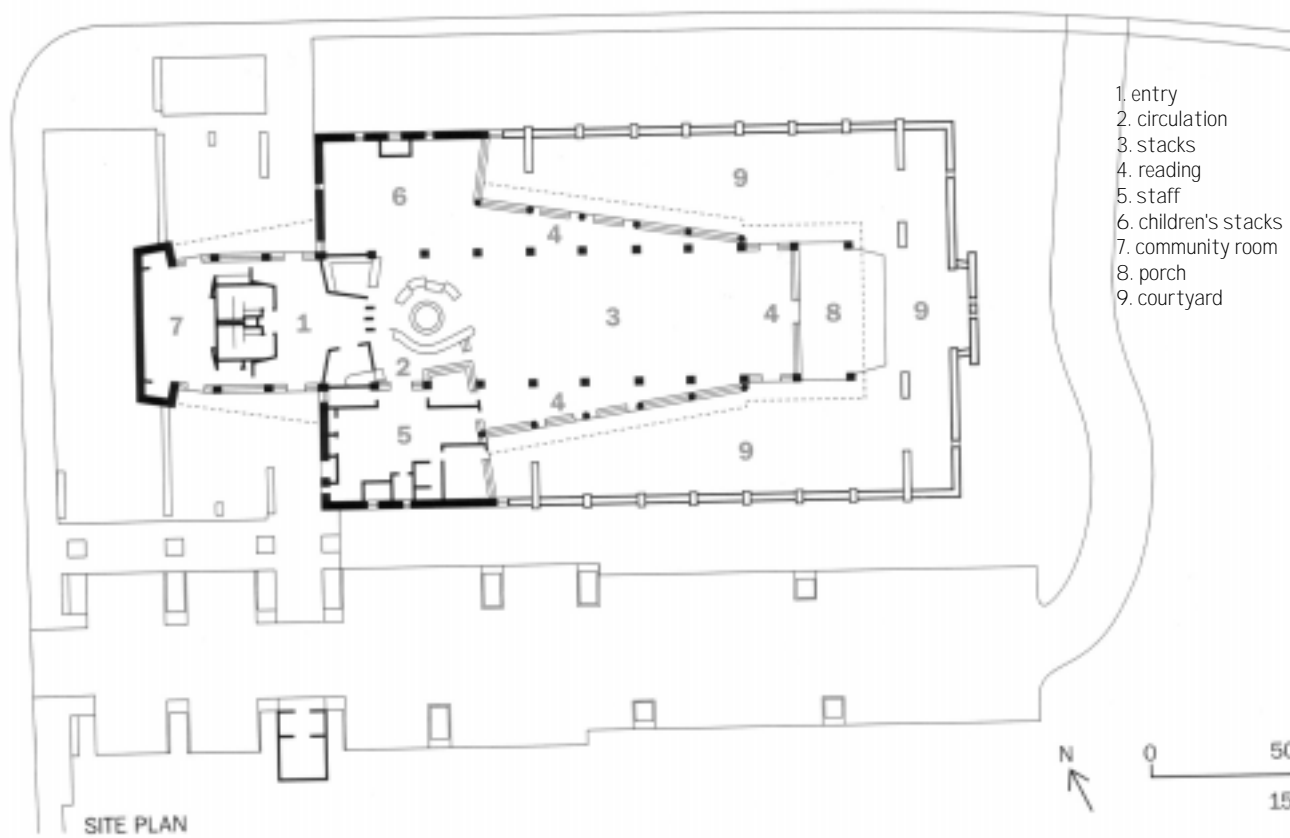
"Working closely with engineers Ove Arup & Partners, the architects developed a strategy founded on basic passive solar and natural ventilation principles with decidedly low-tech systems. . . . As a result of these measures, Arup sized the HVAC system only for "peak-trimming," on those few days when inside temperatures exceed 78 degrees. Chuck Angyal of San Diego Gas & Electric, which provided pro bono technical consulting under the utility's incentive program, predicts that the building's energy consumption should be half that of San Diego's typical branch library. Steele stresses that people have to be taught to use buildings that rely on "passive" means for environmental control, and that these buildings, paradoxically, demand more interaction from those who are responsible for operating them."



View of southeast corner of library from the garden courtyard.



South-north section of stack area.



Building and site plan. Note north arrow.

4 pts

1. Enumerate **four** passive design strategies that are used in the library. **Explain** how each one works and why it is effective for the climate and program. **Illustrate** the strategies as appropriate.



Typical study carrel positioned against north or south wall.

3 pts

2. Critique the thermal zoning of the building. **Describe** the strategy used and give its **weak points and strengths**.



Looking west through the center of the stack area.

3 pts

3. Suggest **appropriate** glazing for the stack area—one choice for all orientations (south, north, & east walls and clerestories). **Explain** why your choice is appropriate and reveal any **reservations** you may have about it.