

Arch 464
ECS
Spring 2015

Name _____

Quiz #4

"Carmel House Acoustic Auto Court"

Read and look at everything before you write!



Illustrations and text from Architectural Record 04:15.

For this problem you are an acoustics consultant to the anonymous owners of the 6,900 sq.ft. Carmel House (viewed from across auto court, above) designed by Jim Jennings Architecture.

The owners want to show off their new home and take advantage of Carmel's misty and temperate evenings by employing a string quartet (violins, cello, and bass) to play a classical repertoire to a small gathering of friends on their auto court in the moonlight. The auto court is grid-reinforced permeable gravel and the walls facing the terrace are virtually all concrete and glass, except for the wooden garage doors (not pictured) on the east side of the court.

CARMEL RESIDENCE

In A Serene Place: A simple modernist free plan, organized around outdoor spaces, integrates lessons of the past.

San Francisco architect Jim Jennings began his studies as an engineer—not a big surprise considering that his modernist architecture, which includes the award-winning Visiting Artists House in Sonoma County, demonstrates a through-line of formal elegance and rigorous clarity. Moreover, an engineering feat—a prefabricated structural system that “liberated the floor plan,” Jennings says, by eliminating the need for shear walls—enabled the form of his latest project, in northern California. The single-story, 6,900-square-foot house, a quiet triumph of right angles and rectilinear motifs, rests as a solid, serene presence on a ridge within a nature-filled private development.

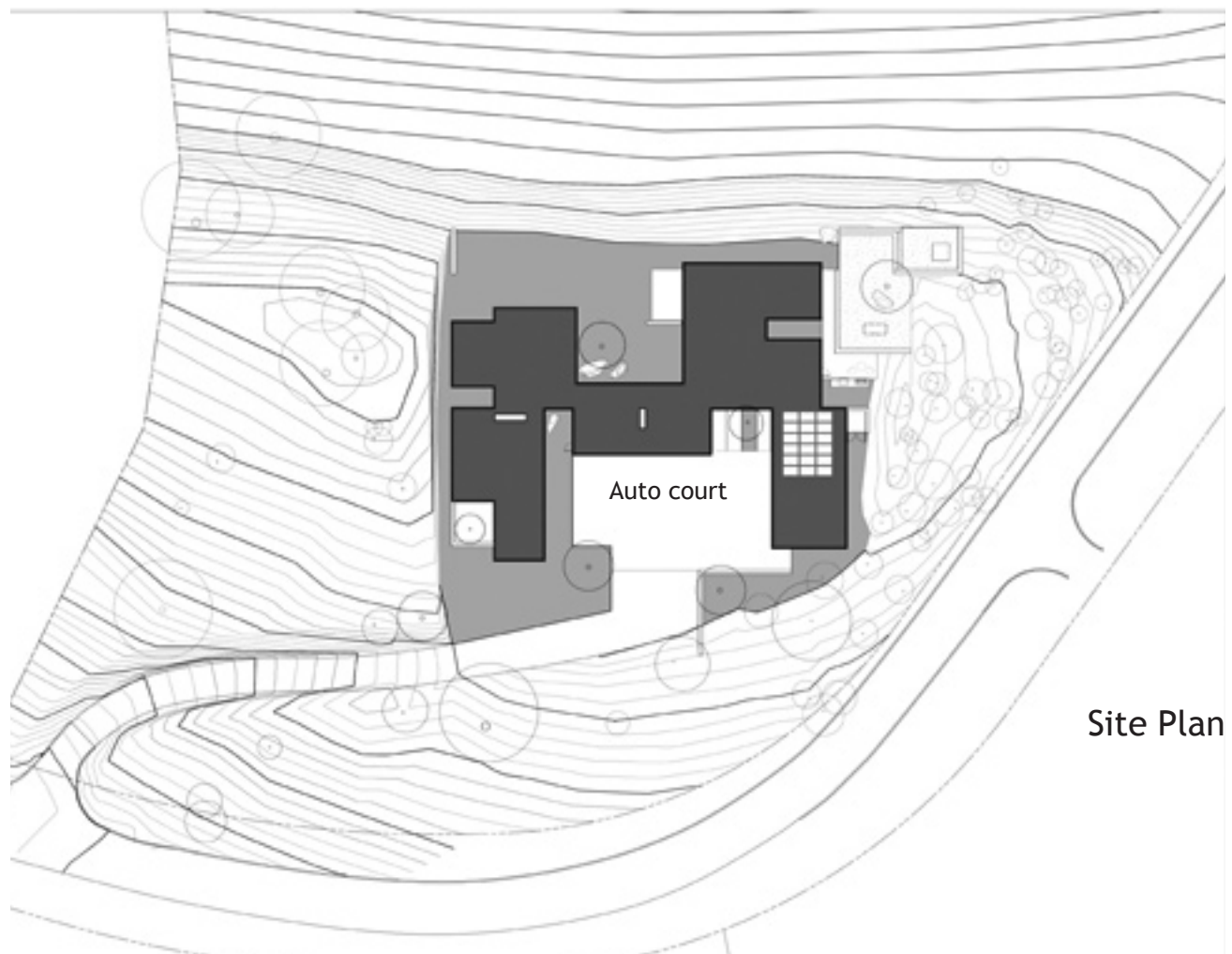
The setting is as worthy of contemplation as the house itself, five acres located in the Carmel Valley, a renowned wine-growing region tucked into the Santa Lucia Mountains. Monterey Bay is to the north, and a coastal climate causes constant weather changes, with fog creeping in over the hills. Here Jennings embedded a calm, protective perch for observing these phenomena.

The owners are a retired couple who split their time among New York, Florida, and California. “We knew we wanted a modern house in the old-school sense, inspired by the International Style,” recalls the wife. “I don’t like circles or curves.” After hearing about Jennings through friends, the two gave him the basic program, which included space for entertaining visitors and for an adult son. After Jennings toured the property, he took the couple to see a house he’d designed in Napa Valley, which, he says, “is configured to create a series of exterior spaces that interlock it to the site.” The trip sealed the deal.

Though his Carmel Residence doesn't resemble Le Corbusier's prototypical Dom-ino House, it shares some of its DNA, especially the way it relies only on the columns and roof for support. Here, the structure is a steel moment frame, designed and fabricated locally. Its rigid, bolted connections between beams and columns transmit lateral forces directly to the ground, so that walls can simply define interior spaces. Beams, square tube columns, and light-gauge joists were delivered to the site cut to size and predrilled with bolt holes, and the entire structure was assembled in just seven days.

On the exterior, a fascia of dark paper-based composite panels emphasizes the structure's horizontality and helps it blend into its surroundings. A short, inclined driveway leads up to the gravel parking court; the house bounds this area on three sides. With its opaque cladding of ½-inch precast concrete panels, you might think you'd stumbled upon a private art gallery or a chic little hotel. A tree standing sentry near a glazed stretch of facade tips you off to the entrance, and the inscrutability fades as you approach it. The owners originally wanted the front of the house to have more glazing but had second thoughts when they realized a large space was required for vehicles (a fire truck must be able to turn around), which they felt would detract from the views. “Jim was right to suggest less transparency here,” says the husband.

The foyer is placed at the house's midpoint and opens into a sun-dappled hallway, the spine that connects the public and private spaces. This circulation path and nearly every room combines glazed



sections and solid partition walls, the latter often topped by clerestories. “Five acres of land gets you a lot of privacy, so we used glass whenever possible,” Jennings says. A grid of mullions and muntins visually breaks down the expanses of glass and frames well-composed views that range from spectacular (one vista extends all the way to Monterey Bay) to intimate (partly enclosed by a rugged wall of native Carmel stone).

Much like the natural world around it, the architecture succeeds in achieving a harmonious and calibrated balance. The skillful layout and well-proportioned rooms make for a home that feels ample and generous but not sprawling. Materials and finishes in earthy grays, taupes, and rusts are a tranquil backdrop on sunny days but add warmth and texture when fog rolls in. And, despite allowing views outdoors from almost anywhere, solid walls and built-ins also keep the spaces humanly scaled and often block views that are less than graceful (a golf course, its clubhouse).

Both Jennings and his clients describe their working relationship as highly collaborative and symbiotic, and the list of superlatives that the couple uses for their new home is long. But none of them could have predicted how well it’s been received within the development, where modern-style dwellings are not the norm. During a meeting with the design review committee, the chairperson told the group, “This is the kind of architecture we should be building here.” And neighbors have offered praise or confessed, “I didn’t think I’d like your house, but I love how it turned out.”

—Deborah Snoonian Glenn

Analysis

1. Does this terrace space act as an acoustic free field? Explain why or why not.

3 points



Above. View of the house's southwest corner and the lawn of lavender. Top right. View of the northeast corner of the house and the ocean beyond.

Design

3. On the plan show where you would place the quartet and five small round tables for 3 or 4 guests each. Explain your scheme and perform a simple ray tracing analysis of how the reflected sound would be propagated to the audience.

4 points



4. You have permission to insert a diffusely reflective acoustic intervener and a curved reflective ceiling panel into the auto court—each is ten feet by twenty feet. Show where you would place them in the plan and section/elevation (and the players and audience too) to improve the acoustics of the auto court. Explain why.

