

Arch 464
ECS
Spring 2011

Name _____

Quiz #1

"Before & After, Before & After"



For this problem you are the daylighting consultant for a new prospective tenant of the 990 Offices Building. Epstein Construction, who was sharing the building with Rob Paulus Architects, has opted for a larger building. Consequently, the Tucson Museum of Contemporary Art (TMCA) is considering using the space as an extension gallery for displaying and selling artwork under natural lighting conditions.

TMCA has asked you to critique the existing conditions and to recommend a scheme for improving the daylighting in the space, given the museum's needs. The vacated office space has interior dimensions of 36' by 50'. Except for the storefront window on the east and two tiny east- and west-facing windows, all the daylight enters the building from the 4 south-facing roof monitors, which are centered in each of four ceiling bays, and the large north-facing windows.

Tucson is at 32° North Latitude and has an arid climate with mild winters and hot, dry summers. At the summer solstice the sun rises 28° north of due east and at the winter solstice it rises to 35° above the horizon at solar noon.



Above. Interior view of the architects' office space.

Left. Northeast corner of the newly remodeled building.

Text and photos as well as architectural drawings are given below and on the following pages to help you understand the building.

LIKE MANY METROPOLITAN

areas in the West, Tucson has its share of generic strip malls and sprawling subdivisions. As a native of the desert city, architect Rob Paulus has long aspired to buck the development trend, focusing instead on urban infill, adaptive reuse, and sustainable design. His recent project, 990 Offices, exemplifies this ethos. It also marks the third step in an impressive endeavor to breathe new life into Millville, a vapid industrial zone near downtown.

To fully understand 990 Offices, one must first rewind to 2002, when

Paulus took a major leap of faith in urban revitalization. He and his wife, Randi Dorman, president of the Tucson Museum of Contemporary Art, teamed up with two investors to purchase a vacant 80-year-old cold-storage facility in Millville. The architect then embarked on transforming the warehouse into condos – a novelty in Arizona at the time. “This was the first residential loft conversion in the state,” says Dorman. The couple also acquired a roughly 1-acre parcel across the street, where they set out to construct a series of metal-clad,

single-family dwellings designed by Paulus.

Both projects were completed in 2005. The 51 “Ice House Lofts” were quickly snapped up (one went to Paulus and Dorman, of course); the nine “Barrio Metalico” homes also sold fast.

The same year, the duo expanded their empire, this time acquiring an adjacent half-acre lot occupied by an auto shop. The shop closed in 2008, and Paulus decided to convert the 30-year-old facility into an office building for his firm and a tenant. “It was a great opportunity to ‘walk the

walk’ and create an energy-efficient, naturally lit office with some intriguing landscape features,” he explains.

The building got a major overhaul. Paulus retained the steel framing but otherwise stripped the structure clean. He replaced the walls with an aluminum-clad rainscreen system; heavy insulation helps block heat, thus minimizing energy costs. To bring in natural light, Paulus inserted a clerestory on the building’s south side; on the north – the entrance facade – he replaced roll-up garage doors with glazing that overlooks a



PHOTOGRAPHY: © LIAM FREDERICK

courtyard. The building’s northern orientation helps minimize heat gain during the sizzling summer months.

Paulus conceived clever ways to repurpose nearly all remnants of the original structure: Metal garage doors became fencing; broken pieces of concrete were used for paving; and steel beams were made into raised garden beds (yes, this office has an organic vegetable garden).

Inside, the building was divided in half – one side for Paulus, the other for his tenant, Epstein Construction – with a shared bathroom at the core. For his firm, Paulus opted for an open floor plan. With the exception of the walled-off kitchen, furnishings delineate program areas (reception, meeting area, work stations, a library). His tenant, however, wanted enclosed rooms, so the architect created a central corridor lined by traditional offices. “It’s by far the most functional office we’ve ever had,” says Mike Epstein, owner of Epstein Construction.

What is common to both spaces is the undulating wood ceiling, which warms up the grayish interior. “It

started out as, Let’s do something to break down the sound and get light coming in,” Paulus says of the design intent. “I also play the violin, and I thought it would be nice if we could mimic its sensuous curves.” The ceiling system comprises pine plywood strips affixed to a suspension grid made of fused sheets of plywood. Skylights allow natural light to pass through the slats and into the work areas below.

Although the project was completed last April, the firm will have its official grand opening party this month, on February 11. To hear Paulus tell it, passersby likely will see guests sitting around the fire pit in the courtyard, listening to someone strum a guitar. They might even spot his 6-year-old daughter roasting marshmallows. “Since we live across the street,” he says, “the office courtyard has become an extension of our outdoor living area.” Through his remarkable efforts in Millville, this Tucson architect is proving that even a gritty, lifeless urban area can be delightfully transformed. ■

A landscaped courtyard features garden beds, a fire pit, and a jet cowl repurposed as sculpture. Irrigation is provided by rainwater stored in two underground tanks.

CREDITS

ARCHITECT: Rob Paulus Architects – Rob Paulus, principal in charge; Liz Farkas, project architect; Andrew Hesse, Bill Mackey, team members

ENGINEERS: Schneider & Associates (structural); GLHN (electrical)

CONSULTANTS: Chris Winters & Associates (landscape)

CLIENT: Randi Dorman & Rob Paulus

SIZE: 4,292 square feet

COST: \$343,360

COMPLETION DATE: April 2010

SOURCES

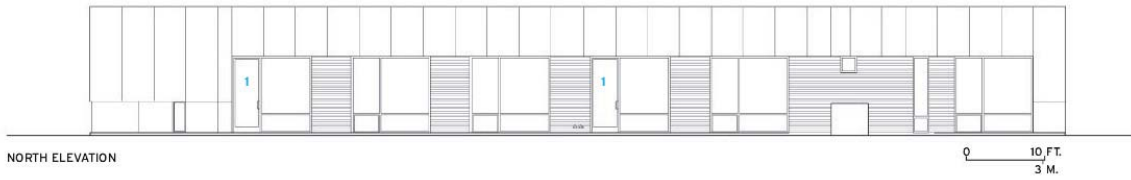
EXTERIOR WALL SYSTEM: Novelis (anodized aluminum); MBCI (corrugated panels); VaproShield (air barrier, battens)

ROOFING: Versico (thermoplastic polyolefin membrane); Insulform (insulation)

WINDOWS: PPG (Solarban low-E glass); New World West (storefront aluminum); Milgard (aluminum, fixed and operable)

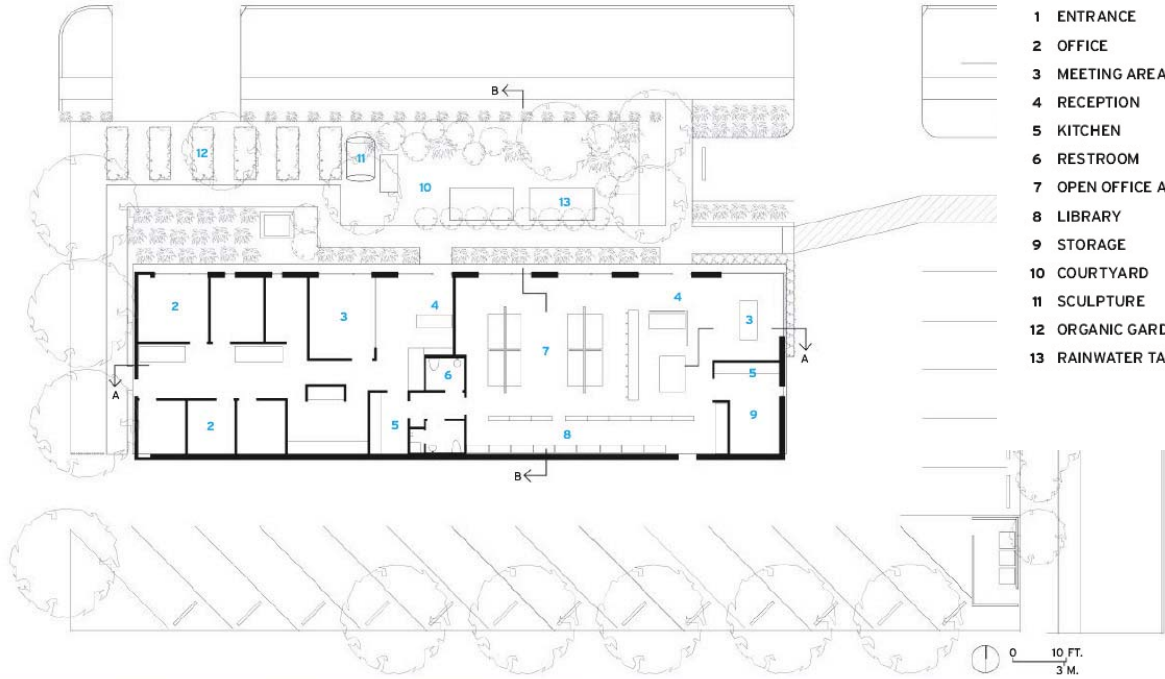
DOORS: New World West (entrance); Steel Dor Tucson (metal); Arizona Sash & Door (wood)

EXTERIOR LIGHTING: Progress Lighting (cylindrical wall lanterns); Focus Lighting (landscape spotlights)



NORTH ELEVATION

0 10 FT.
3 M.



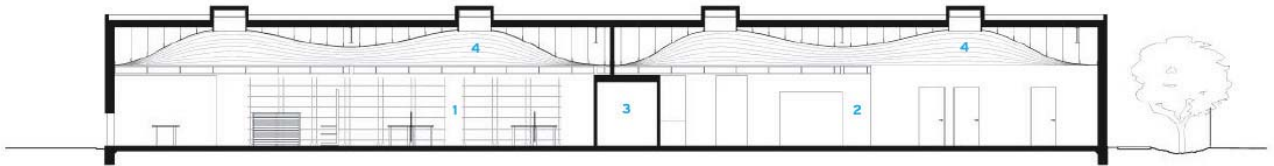
- 1 ENTRANCE
- 2 OFFICE
- 3 MEETING AREA
- 4 RECEPTION
- 5 KITCHEN
- 6 RESTROOM
- 7 OPEN OFFICE AREA
- 8 LIBRARY
- 9 STORAGE
- 10 COURTYARD
- 11 SCULPTURE
- 12 ORGANIC GARDEN BEDS
- 13 RAINWATER TANKS

0 10 FT.
3 M.

TUCSON

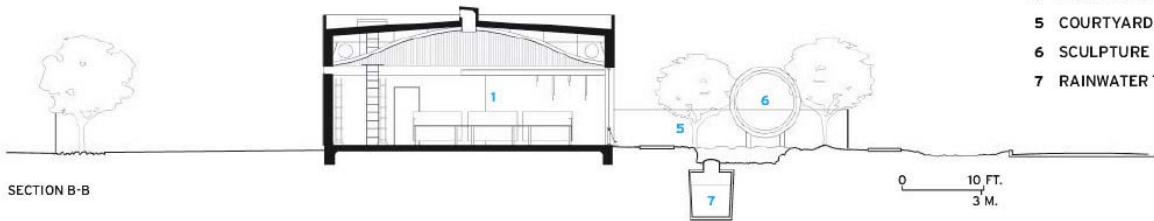
990 OFFICES

ROB PAULUS ARCHITECTS



SECTION A-A

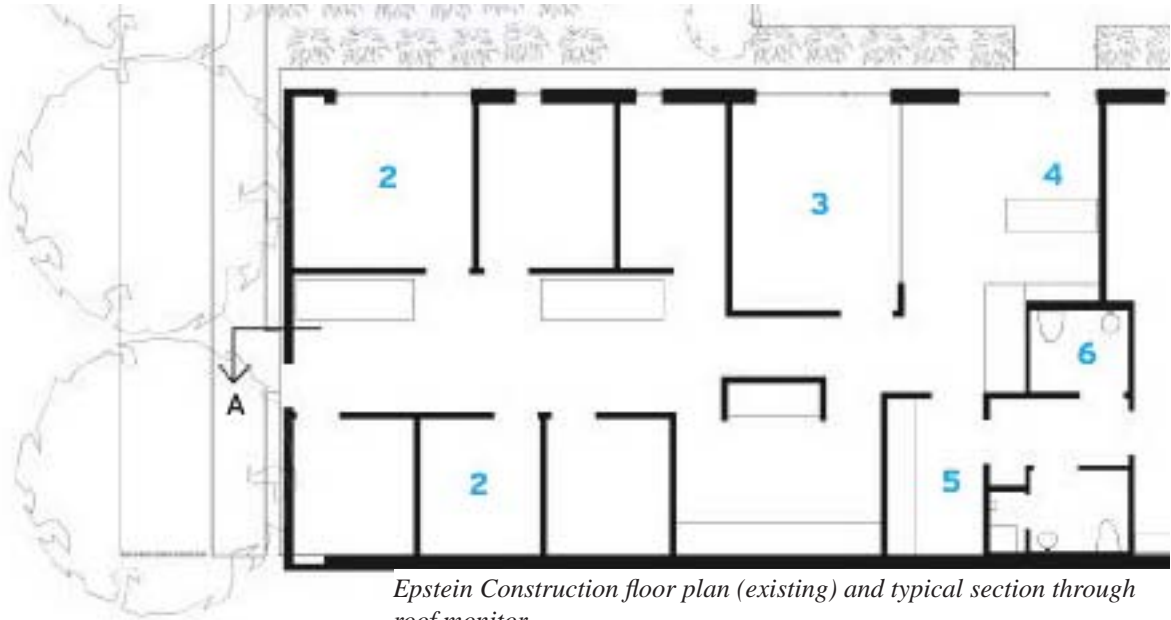
- 1 ARCHITECT'S OFFICE
- 2 TENANT'S OFFICE
- 3 RESTROOM
- 4 CEILING SYSTEM
- 5 COURTYARD
- 6 SCULPTURE
- 7 RAINWATER TANK



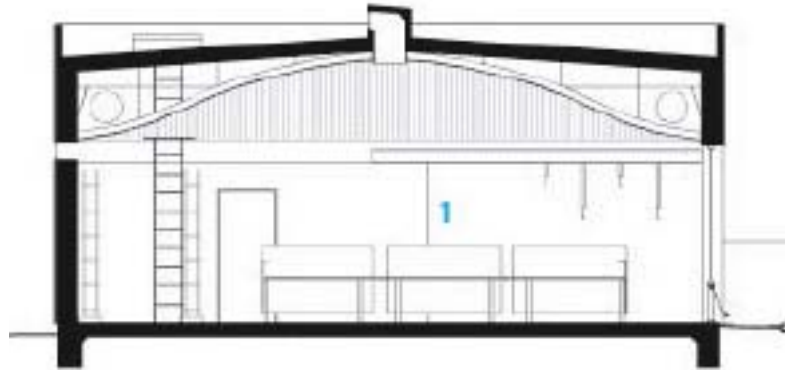
SECTION B-B

0 10 FT.
3 M.

3 pts 1. Describe three (3) lighting problems in the existing space that you'll need to overcome in creating a beautifully day-lighted gallery space for paintings and sculpture. Point out/illustrate these problems on the plan and section provided.



Epstein Construction floor plan (existing) and typical section through roof monitor.

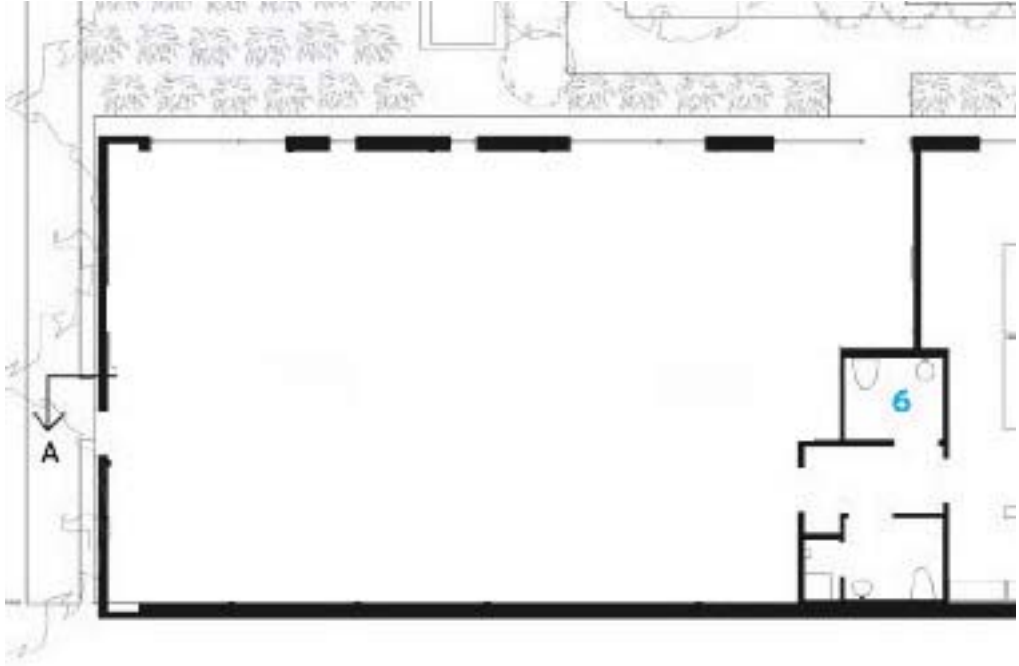


3 pts 2. Pose a solution to each of the problems that you identified in the first question. Illustrate your solutions with appropriate sketches/diagrams.

3. In the recycling spirit of the building, the existing office walls can be recycled into five 8' high, 10' x 2' movable partitions to be used for mounting paintings (on both sides). Place these partitions in the drawings below. Also indicate 5' by 5' places for three major sculptural pieces.

4 pts Given these furnishings and the solutions you offered in question 2, illustrate the expected distribution of light in your design on the plans below for:

A, a perfectly cloudy day



B, a perfectly clear summer solstice day, just after sunrise

