Corporate Campus, San Jose, CA

LANCE HOSEY, AIA
William McDonough + Partners

DESIGN DESCRIPTION

Master Plan

The corporate campus for Palm, Inc., eventually will consist of one and a half million square feet, executed in three phases, on thirty-four acres of land in San Jose, CA. The design of the first phase, which entails 550,000 square feet, is currently being detailed, and construction is scheduled to be completed in the summer of 2002. William McDonough + Partners has lead the design, acting in conjunction with HOK's San Francisco office. We also have collaborated very closely with Warren Byrd of Nelson-Byrd landscape architects in Charlottesville, as well as a number of consultants I'll mention later.

Early last year, Palm split off from 3Com, its parent company, so this project represents Palm's first opportunity to establish an independent identity. Palm designs its own products according to three principles known as the "Palm Zen" – "simple, elegant and useful." Their mandate to us was to provide an environment that would foster a coherent sense of community, both within the campus itself and with the city at large.

Located on a prominent site on the edge of Highway 270 and North First Street, the campus will serve as the Western gateway to the city. Conceived as a continuous network of interconnected exterior and interior spaces, the master plan establishes an urbanity missing in many Silicon Valley corporate campuses. The site plan forms a large semicircle, inspired in part by both a palm leaf and the palm of a hand. The central axis strikes a north/south line, so the radial layout may also be seen as a gigantic sundial, tracking the course of the sun across the site. The landscape will be articulated to mark shadows at certain times of day and year.

More generally, the plan emulates the cohesiveness of classic urban spaces such as the Royal Crescent in Bath. The architecture occurs in two groups: a series of lower, horizontally oriented buildings that address the urban and pedestrian edge of the site (Phase 1) and a ring of taller, vertically oriented buildings that address the scale of the highway and the mountain views beyond (Phases 2 and 3). A commons building housing a dining facility, fitness complex, and auditorium marks the hub of the plan and sits on the edge of a lake in a large courtyard, the communal center of the campus. The tree-lined promenade connecting the urban corner to the campus center will be lined with training and meeting spaces.

The design honors Palm's own product both in spirit and in use. Handheld and wireless devices minimize the landscape of the desktop by eliminating traditional office tools such as the calendar and the rolodex, giving people new mobility. This flexibility and minimization recurs in the campus design, where service functions are hidden either underground or in a rear alley. The temperate climate of San Jose allows for constant activity outside, so we are designing outdoor offices and meeting space. Palm technology embedded in the building infrastructure offers this freedom. Employees may communicate with one another, regulate building temperature and reserve conference rooms by using their Palms.

Architecture

The primary goal of the building design is to provide a humane environment through abundant daylight, fresh air, and access to green space. The required work area is broken into ten buildings, each of which is designed at a scale to promote daylight and communal interaction. The building floor plates are relatively narrow to ensure proximity to windows, and the ceiling heights are relatively tall to allow deep penetration of daylight. A raised floor system not only offers flexibility of cabling, furniture systems and HVAC supply, but also enhances the quality of air by delivering it directly to the breathing zone and saves on energy use by supplying air at higher temperatures than conventional systems.

Scale was an important factor in the design. The overall size of the campus could be overwhelming if not scaled appropriately, so the exterior and interiors of the buildings, as well as the landscape, are designed with the individual in mind. The floor plates are relatively small to ensure light, views and limited groups of personnel. In Phase 1, the building heights are restricted to four stories to maintain ample light in the courtyards. A classic division of base, middle and top relieves the scale and firmly places the buildings by responding to the earth and sky differently. The architecture is further wedded to the ground through the drainage system. Water is shed through exposed drain leaders which spill into a network of rills and runnels irrigating the landscape and filtering run-off before it reaches the city storm system. Water collection also helps cool the courtyards and provides white noise against background traffic. Palm encouraged a balance of tradition and innovation to express their corporate culture.

Building Technology

Given our aim to enhance the connections between inside and outside, both to increase comfort and to encourage movement between, the building skin became a critical feature. We carefully studied the three components of the envelope – structure, cladding and glazing – to determine how they could further the goals of the project.

Structure

The structure is flat-slab concrete on thirty-foot column bays. Much of the concrete is exposed and will contain a natural beige pigment to echo the local landscape. The use of concrete enhances environmental performance by avoiding fireproofing and other contaminants and by regulating thermal variation. Exposing the structure allowed several things. First, we could eliminate a dropped ceiling, which we have found tends to compromise air quality through dust and stagnation. In this case, it also happens to be unnecessary, given the raised floor.

Exposing the concrete also allowed us to take advantage of its thermal mass. The Diurnal Heat Capacity of concrete is excellent: the mass of the exposed slabs and walls stores warmth and "coolth" for later release, thereby resisting extreme fluctuations in indoor temperature. The low humidity in San Jose allows night-time flushing to occur easily; outside air crosses the slabs in the under-floor plenum to cool it off after hours. The climate is moderate enough that the basic building envelope could be designed without additional insulation.

Rainscreen

A clay tile rainscreen forms the main skin of the building. A rainscreen is a cladding assembly located on the outside of an airspace in front of the primary building wall where the insulation occurs. This arrangement protects the primary wall from the detrimental effects of heavy wetting and solar radiation. The shaded air space reduces thermal fluctuation, avoids localized cold bridging around structural members, and reduces the risk of condensation.

The simplest principles of the rainscreen are common now in glazed curtain walls and in any wall system with an internal air space. The idea has been used in some countries for centuries, notably in wood frame houses in Norway, where the joints in the clapboard siding are completely open to allow the skin to breathe.

The product used here, terra cotta tiles on aluminum framing, is manufactured by the German company Argeton. Originally developed by Thomas Herzog, the system is popular in the Netherlands and other parts of Europe, but it has never before been used in the United States. Right now a handful projects are being designed and built with the system in the U.S., and these include projects by I.M. Pei and Nicholas Grimshaw.

The clay tile system expands on the simple rainscreen in a number of ways and offers many environmental and aesthetic opportunities. Like the Norwegian cladding, the joints in the tile are completely open, so the interior of the envelope is ventilated to avoid moisture build-up. Open joints also eliminate mortar, grout, caulking, and other sealants and therefore reduce building maintenance by avoiding the need for periodic repointing. An added benefit is to reduce the number of potential chemical toxins contained in many sealants.

The idea of the open-joint system is to allow air to penetrate but not water. Free air flow equalizes the pressure inside and out in order to counteract wind that might otherwise push water through the skin. The shiplap profile of the tiles forms a water dam to protect against capillary action and any moisture forced into the joints through heavy rain. In many cases, the rainscreen stands in front of fully exposed insulation in a simply stud wall.

The use of terra cotta itself furthers the design principles of the building. As a natural material, it is non-toxic and environmentally friendly. Its color neither reflects nor absorbs too much light and therefore reduces glare and heat-gain. Clay tile is also regionally appropriate, echoing the Spanish-style roofs common to the area. (The Novellus Headquarters across the street, for instance, includes a Spanish tile roof, as does the nearby Sun Microsystems campus.) The skin here abstracts the traditional curved tiling and moves it from the roof down onto to the wall surface. The earth tones of clay and concrete complement the California terrain, as well as the abundant plant life in the campus.

Glazing Design

The glazing system is designed to optimize natural light on the interior. The glass itself, a Viracon product (VE2-2M), is double-pane with a low-E coating, a visible transmittance of 0.60 and a shading coefficient of 0.35. A slight green tint reduces heat gain, and the color actually complements the terra cotta. The typical windows are divided into three lights: a lower operable unit, a middle vision light, and an upper transom. The lower section offers the ability for occupants to open windows, an important feature to offer direct fresh air, especially in such a temperate climate. The middle vision light is shaded on the exterior by a metal shelf below the transom and on the inside by a roll-down scrim shade, which might be operated mechanically to adapt to varying sun angles. At the transom, fixed reflective louvers bounce light up onto the ceiling to provide soft illumination and also prevent direct penetration late in the afternoon. Shading at the top floor is provided by a continuous perforated metal cornice and at the bottom floor by a deeper setback and occasional loggias. Artifical lighting consists of fluorescent pendants running the length of the building so that circuiting can allow dimming to occur in gradations away from the windows.

Computer modeling by both the daylighting consultant and by the mechanical engineer helped refine the extents of glass and the exact configuration of the glazing profiles. We have worked with Taylor Engineering on a number of projects, and they have been crucial to the performance of both the skin and the raised floor system. We also have come to rely on the expertise of George Loisos and Susan Ubbelohde, daylighting experts in Oakland. In this case, they studied a physical model inside a heliodon to determine critical areas, and they refined their analysis through computer modeling.

The use of the exterior shelves and transom louvers varies according to building orientation. Early in the process, alternative designs treated the fenestration differently for each solar face, but the client responded much more enthusiastically to a consistent skin. Continuity of expression seemed more appropriate for Palm's identity. In this way, the technical and aesthetic aspects of the building skin both played a part in our effort to create a coherent sense of community in Palm's campus.

REFERENCES

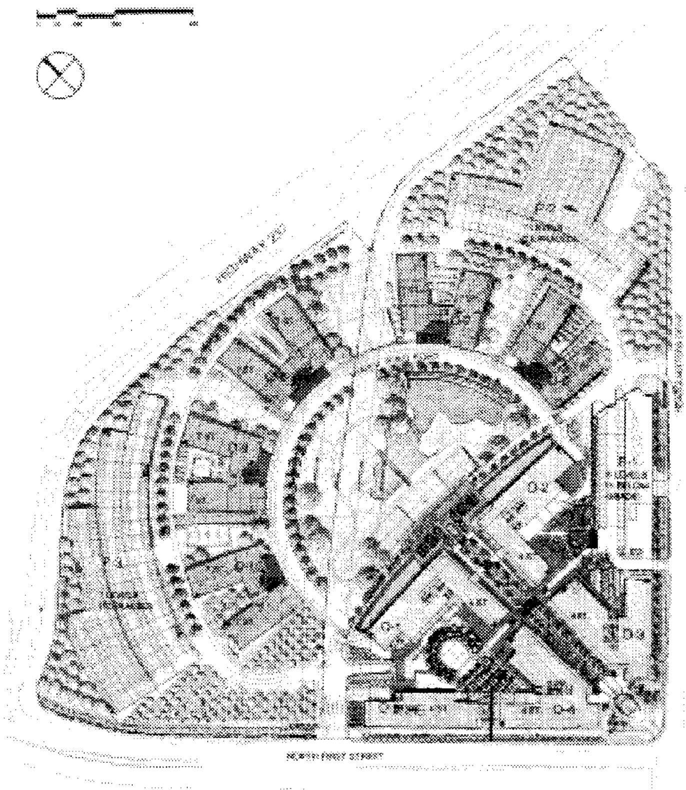
William McDonough Architects, *The Hannover Principles: Design for Sustainability.* Prepared for EXPO 2000, the World's Fair, Hannover, Germany (Charlottesville, VA: William McDonough + Partners, 1998).

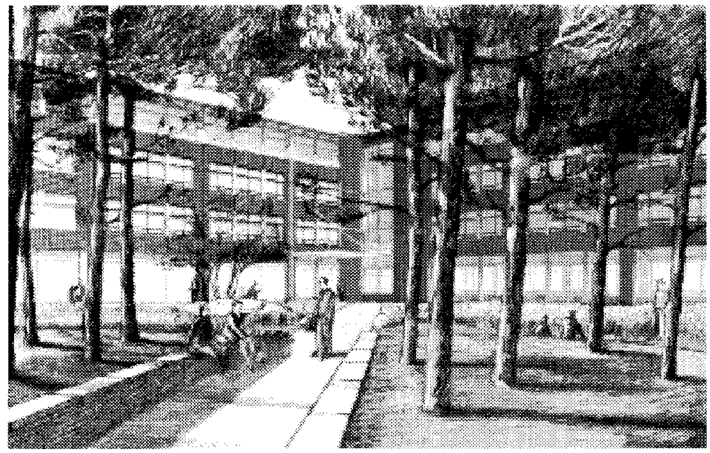
William McDonough, "Design, Ecology, and the Making of Things," in *Theorizing a New Agenda for Architecture*, Kate Nesbitt, Ed. (New York: Princeton Architectural Press, 1996), p. 398-407.

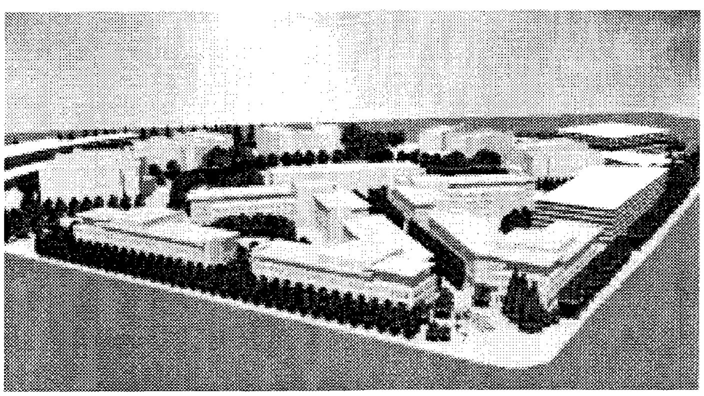
J.M. Anderson and J.R. Gill, *Rainscreen Cladding: a guide to design principles and practice* (Stoneham, Massachusetts: Butterworth Publishers, 1988).

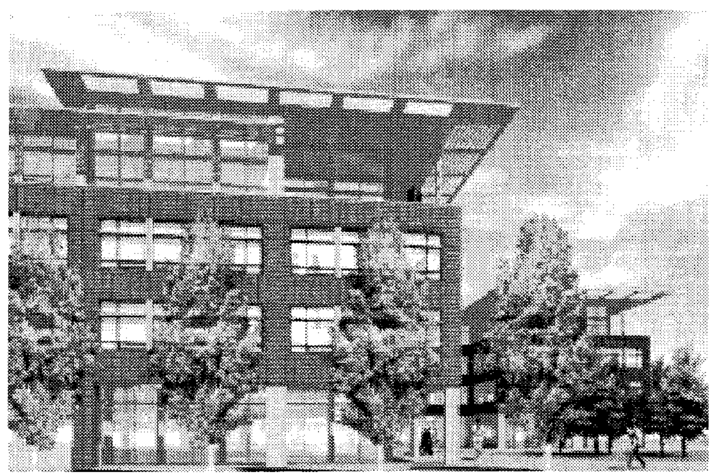
Richard Keleher, "Rain Screen Cladding, Air Barriers, and Curtain Walls," *The Construction Specifier,* February, 2000, pp. 37-40.

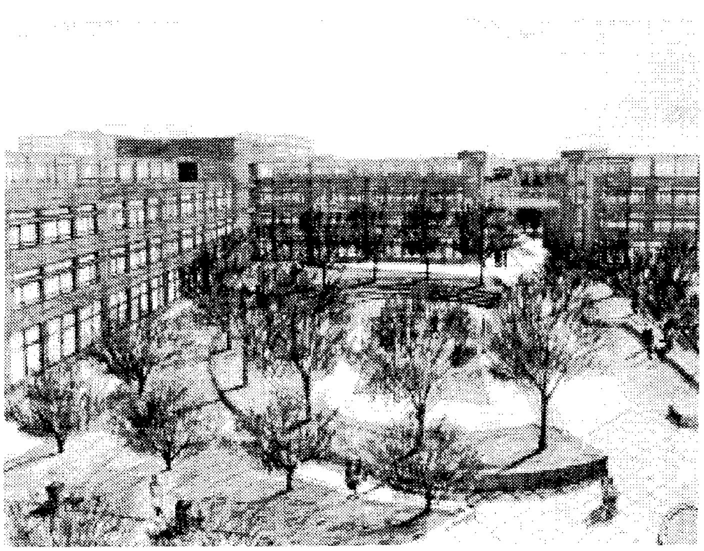
Randall Thomas, *Environmental Design* (London: E & FN Spon, 1996).

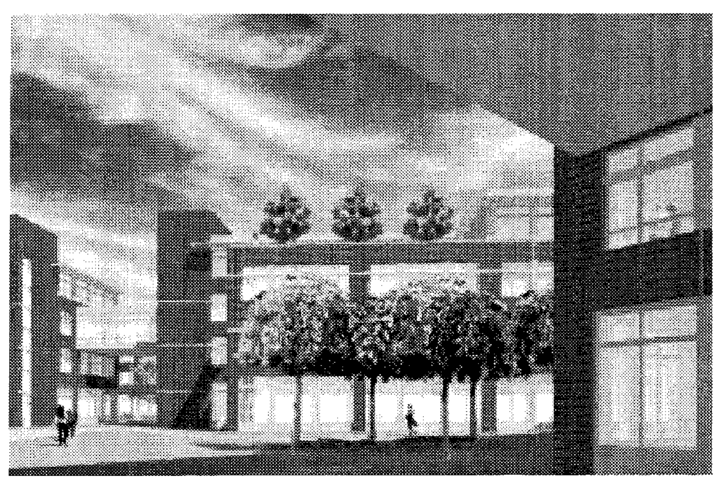

NORTH FIRST STREET

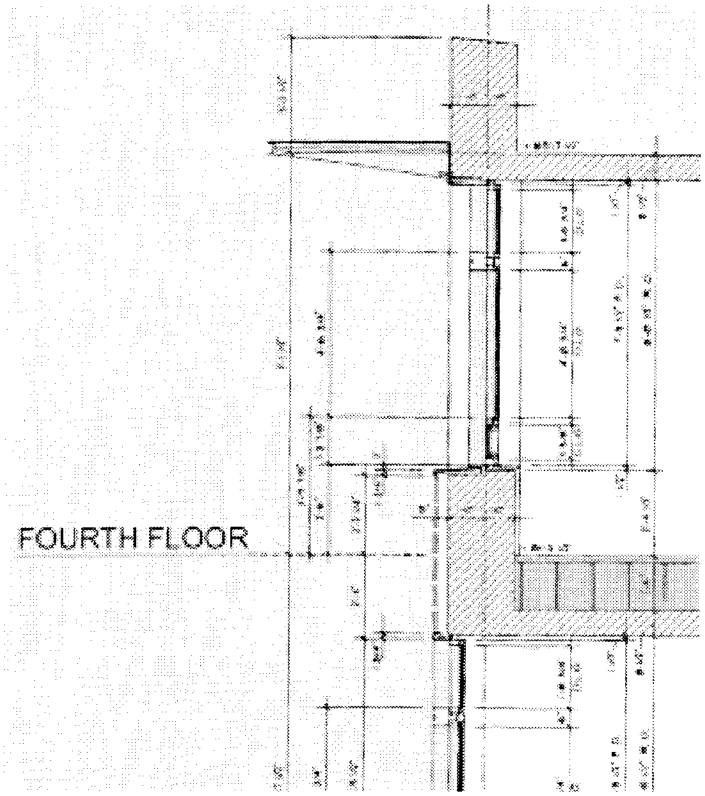












10 Design principles

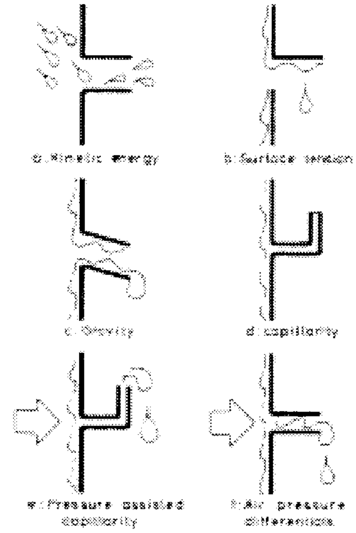
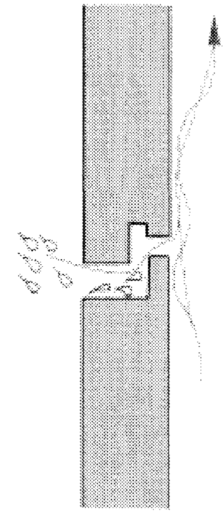


Figure 5 The processes by which rainwater leaks through joints



Open-joint Clay Tile