Green Projects Entry

School of Nursing & Student Center (o)

Section 1 - Project Overview Information Part 1

Project name:	School of Nursing & Student Center (o)
Project owner:	The University of Texas Health Science Center at Houston
Project address:	6901 Bertner Avenue Houston, TX 77030

Section 2 - Project Overview Information Part 2

Project completion date:	8/2004	*(m/y) format*
Project Site:	Previously Developed	
Project type:	Higher education, Health care, Laboratory	
Project site context/setting:	Urban	
Other Building description:	New (100% new)	
Lot size:	34177.00 ft2	
Building gross floor area:	195000 ft2	
BOMA floor area method used?:	no	
Number of permanent occupants:	200	
Number of visitors:	620	
Occupants (hours/week/occupant):	40	
Visitors (hours/week/visitor):	20	
Total project cost:	$57,000,000	

Section 3 - Project Overview General Description

General description: The School of Nursing design team became stewards of the vision established by University leadership for a nursing school and student community center designed to be state-of-the-art for learning, research, student service and workplace. The resulting building is a pedagogical model of wellness, comfort, flexibility, environmental stewardship and fiscal responsibility; it is another step in the direction of healthy, environmentally responsible actions that the University began with changes to facilities operations to reduce the use of energy, polluting chemicals, cleaning agents, potable water and other resources.

The building program was evaluated to balance the community and individual needs of users — both students and faculty. There are many non-traditional students in the nursing program due to the high percentage of graduate students, so the program was adapted to provide study and support spaces.The team redefined classroom and practical lab spaces to be shared by all departments of the school. In addition, during the design process, when the Texas Legislature mandated increased enrollment in nursing schools state-wide, the actual Full Time Equivalent for the new building grew by 20%. Flexible building elements such as raised floor and demountable partitions allowed for revisions to the interior design to accommodate the higher population.

Section 4 - Top Ten Measures

Top Ten Measure 1: Sustainable Design Intent & Innovation

Key environmental aspects: The UT School of Nursing and Student Community Center establishes benchmarks for healthy buildings; for daylight; for visual acuity and cognitive learning; for pedagogy and the capacity to learn and collaborate; and for flexibility, durability and reduced operating costs.

The design is straightforward and transparent. In plan and section, distinct zones organize building functions, to maximize exposure to the adjacent park, views and daylight. Carved spaces penetrate the building—such as a breezeway and three atria—to introduce light and connect the building to its site and environment.

Vertical organization and fenestration are interrelated. Tactile materials, such as recycled brick and sinker cypress, parallel the public usage of the lower levels; durable, efficient materials clad the upper levels as building functions become more private. Due to orientation, harsh environmental conditions and program requirements, each of the four elevations and the fifth façade, the roof, use unique strategies for accepting desired daylight and rejecting unwanted heat.

Each aspect of the building, including the exterior envelope has inextricable relationships with the building systems; the gardens and labyrinth on the site communicate with the interior spaces; the daylight impacts cognitive learning and visual acuity and so on in a complex web of interrelationships.

Top Ten Measure 2: Regional/Community Design & Connectivity

Regional/Community Design: For the new UT-HSC's School of Nursing, limited sites were available within the dense Texas Medical Center (TMC) campus. Rather than develop a distant, greenfield site, the University redeveloped a small, underbuilt site in the heart of the TMC.

This new, eight-story building strengthens the overall TMC at a prime corner location and allows students, faculty, and visitors access to the existing infrastructure-including bus, light rail, and pedestrian thoroughfares. This facility represents the TMC's renewed effort to add coherence to the campus, which has suffered from lack of master planning due to Houston's absence of planning regulations, and to protect against future flood damage as occurred in 2001's tropical storm Allison.

The building design creates a positive edge to Fay Park, the only park in this area of the TMC. Fay Park provides the TMC with two critical needs-community space and shaded outdoor space. Public features of the facility-an auditorium, café and bookstore-reinforce its community outreach role. The site required some convenient parking; 29 surface parking spaces were built, a significant reduction from Houston's requirement of 129 for higher education facilities. The remainder of the parking is handled off-site as part of the TMC's parking complex.

Percent of building population using transit options other than the single occupancy vehicle 12% Number of parking spaces per person .04

Use other transport options:	12%
Parking spaces per person:	0.04

Top Ten Measure 3: Land Use & Site Ecology

Site ecology: The building occupies almost the entire available, previously developed building site within the dense urban environment of the Texas Medical Center. The project is part of a renewed effort to strengthen the area's masterplan, which has suffered from Houston's lack of zoning requirements, and provides a solution that avoids catastrophic loss during flooding that occurs in the area. The building sits adjacent to Fay Park, a small urban park, and the building's landscape and ecology was designed to enhance the experience of visitors to that park environment. Connections to the park from other parts of the medical center complex are encouraged through a lower level breezeway and sheltered outdoor space at the ground level of the School of Nursing building that invites people into protected spaces and into the landscape. Plantings are indigenous and were selected to be low maintenance. Portions of the roof were designed as green roofs, and similarly appropriate plantings were selected for these areas. Local ecology was used to inform the design of each of the building's facades. The large trees found in the park to the east of the building provide critical shade to reduce the building's cooling loads and were closely protected during construction.

Top Ten Measure 4: Bioclimatic Design

Bioclimatic design: The available site was not ideal from a solar standpoint, requiring the building's long facades to face due east and west. This presented unique challenges and opportunities. Each façade (and the roof) was carefully considered to minimize heat gain and glare depending on orientation – the result is a facility that tells the story of the sun's path through the sky. The need to reduce cooling loads is expressed on each surface of the building, shading devices, rooftop design and covered outdoor spaces. Daylight modeling and analysis helped inform the exact placement and sizing of window openings, vertical fins and light shelves. Building organization responds to the path of the sun and the chance for glare. Adjacent buildings and landscape informs the building's shade patterns and resulting design due to the urban nature of the site. A major breezeway was constructed that serves as a naturally cool outdoor space; it harnesses the venturi effect and the cooler ambient temperatures of the park to the east to provide relief from the hot summer sun. Local materials from within a tight radius play a huge role in the building's materiality – which has a south Texas feel to it as a result.

Top Ten Measure 5: Light & Air

Light & Air: As a facility that teaches healthcare professionals, the building was designed as a healthy indoor environment. All major spaces have access to fresh air (operable windows), views to the outside and daylight as an ambient light source. Interior meeting rooms and workspaces open onto three atriums that provide controlled diffuse daylight. Interiors were designed to be light-filled and all people, regardless of 'rank,' have access to daylight and views. Gathering places (study areas and lounges) view the leafy canopy of the trees in the park; the café is situated along the park so that the shaded space can be enjoyed whether sitting inside or out.

The building promotes indoor air quality and a healthy environment through the selection of materials and access to natural systems—paints, adhesives, sealants, carpets, and furniture systems were selected for their low emission of volatile organic compounds (VOCs). The building is both sheltering and nurturing (shielding from the harsh sun) and yet is open to allow collaboration, communication and the connection between floors, departments and the campus beyond.

Percent of building area that is daylit:	26%
Percent of building that can be ventilated or cooled with operable windows :	12%

Top Ten Measure 6: Water Cycle

Water Cycle:

Water issues surrounded the development of this building. During periods of the year rain and floodwaters invade the area, while at other times drought and heat challenge plant materials. The design addresses both conditions, reduces the amount of potable water consumed by the building and the wastewater leaving the premises.

The storm water management design reduces run-off through the use of pervious paving systems and green roofs and by gathering and storing water for later use. Rainwater is stored in five 30,000-gallon cisterns that combined, capture 826,140 gallons of water annually. This water is used for flushing toilets and landscape irrigation on-site and at the adjacent School of Public Health. Graywater from sinks and showers is also collected for irrigation and flushing toilets—no potable water is used for either purpose which demand 42,000 gallons of water each month. Waterless urinals and low-flow toilets, lavatories, and showerheads further reduce potable water use.

Landscaping and plant materials also play an important role in the water efficiency - the team worked to select indigenous, low maintenance plant materials for the planted areas surrounding the building. As a result, the building uses 48% less potable water than a comparable, conventional building.

Precipitation managed on site:	40%
Total water used indoors:	740870 gal/yr
Total water used outdoors:	0 gal/yr
Percent of total water from reclaimed sources:	65%
Percent wastewater reused on-site:	5%
Calculated annual potable water use:	3.8 gal/sf/yr

Top Ten Measure 7: Energy Flows & Energy Future

Energy description:

The energy consumption reduction goal was 40% (for LEED); this project achieved 41% (an annual energy cost savings of $38,000.00). Peak electrical demand is minimized through an efficient, right-sized mechanical system and utilizing daylight as the primary ambient light source during the daytime peak use. Occupancy sensors and dimmers are also used to limit lighting loads. Operable windows provide natural ventilation during acceptable weather (approximately 134 days/yr).

• To address the undesirable building orientation, the building skin integrates numerous passive strategies to minimize direct solar heat gain and maximize use of natural light.

• Plenum underfloor air distribution with low face-velocity coils reduces air-handling-unit fan horsepower and improves flexibility.

• Generously sized hydronic piping (along with a 16 degree CHW temperature rise) significantly reduces pumping horsepower.

• A heat-pipe heat recovery system recovers heat from the general exhaust system to preheat/cool outside air.

• Condensing hot water boilers were used for seasonal heating of outside air in lieu of 250 psig superheated steam from campus distribution system.

• Mechanical rooms were limited to 100’ above grade to eliminate friction losses from pressure reducing valves needed for the campus system.

• Critical zone reset is used on outside ventilation air with CO2 sensors to minimize ventilation loads.

• Extensive data collection systems collect historical data (1 minute intervals on critical load points) to monitor and track building performance.

The building was designed to support photovoltaic panels with ideal orientation on the roof for renewable energy generation, although they are not installed currently. The facility is a critical-use facility on the Texas Medical Center, utilizing back-up generators for full operation with traditional grid power disconnected. These generators are located above the highest floodplain levels to ensure viability during Houston’s frequent flooding episodes. Currently, these back up generators are conventionally powered.

Performance Rating

EPA	100	
HERS		
Percent total energy savings	40	
	Base Case	Design Case
Total energy (Btu/sf/yr)	29330	17310
Electricity (Btu/sf/yr)	20550	12630
Natural gas (Btu/sf/yr)	8780	4680
Other: (Btu/sf/yr)	0	0
Heating (Btu/sf/yr)	5510	2260
Cooling (Btu/sf/yr)	6380	4840
Cooling capacity (sf/ton)	405.405	481.481
Lighting load connected (W/sf)	1.303	0.5
Lighting load after controls (W/sf)		0.5
Plug load (W/sf)		0.5
Peak electricity demand (W/sf)	3.35	2.44
Percent on-site renewable energy (%)		0
Percent grid-supplied renewable energy (%)		0

Supplemental Narrative

The building was modeled using Visual DOE 3, an 8760 hour modeling program which uses the latest version of DOE 2 as distributed by the Lawrence Berkeley Laboratory. The building' was modeled using occupancy schedules provided by the owner. The building’s exterior fins and horizontal sun shades were included in the model. Building construction parameters, such as walls and windows are constructed in the model per the drawings and specifications. The building is designed to exceed the energy efficiency and performance requirements of ASHRAE/IESNA 90.1-1999.

Building Features

• The Building contains a daylighting feature in the perimeter areas of the building. The building’s electric lighting in these areas is controlled by a dimming system, which will, when sufficient daylight is present, adjust the lumen output of the electric lighting as required to maintain minimum lighting levels, which are 30 foot candles at the center of the occupied space.

• The building contains a Demand Ventilation system. The system will detect the number of building occupants and adjust the amount of outside air entering the building to maintain an acceptable indoor air quality. The amount of outside air entering the building will vary with the occupants, but will maintain a positive building pressure relative to the exterior at all times.

• A high efficiency outside air/exhaust air heat recovery system using an enthalpy mode was used in the model. Building simulation programs currently do not allow for dedicated outside air units, and each air-handling unit was modeled with outside air and exhaust capability.

• Three large skylights occur in the roof over the eighth floor and light also the sixth and seventh floors below via floor openings.

• The building is designed for zero use of CFC-based refrigerants. The chilled water received circulates from the second floor pump room in the adjacent Service Building to air handling units located at each floor through two pipe vertical risers. In the interest of saving operating costs (and incidentally first costs as well), no heat exchanger has been included to isolate the building chilled water system. Instead, the outside air units at the roof have been lowered to the 8th floor level to reduce the pressure requirements of the chilled water system. The chilled water system will be a variable control flow type to optimize operating efficiency by reducing pump energy consumption.

Methodology: The building was divided into specific areas based on proximity, heat load, building features, and occupancy. Each area was assigned operating schedules and occupancy schedules. Wall and window construction, HVAC type, and space temperatures were also assigned. The DOE 2 program calculates the heating, cooling, and electrical loads on each space for each hour of the year. The schedules define the use of the spaces during the year.

Top Ten Measure 8: Materials & Construction

Materials description: The building set out to use locally sourced, durable materials in its highly specialized building skin to encourage long-life (100-year building goal), to promote the local economy and reduce environmental impact; it exceeds LEED's requirement (V 2.0) that 50% of building materials have the required recycled content. The tactile materials used on the lower levels—stone base, reclaimed brick, and sinker cypress siding—are all reclaimed and come from within a 500-mile radius. A high-recycled content was specified in new materials such as exterior aluminum panels, window framing, structural steel and concrete. The concrete structure utilizes fly ash to replace 48% of the Portland cement used in traditional concrete mixes to reduce CO_2 emissions.

On the interior, the selection of low VOC finishes will promote healthy indoor air quality, while the specification of easily reconfigurable demountable partitions was shown to save money long term due to their flexibility and reduction of waste as reconfigurations occur and the building use changes.

75% of the building’s total construction waste was recycled or salvaged—including deconstruction of the building once on site. The construction waste from this building’s construction process was managed and the building’s waste areas were staged for a recycling program.

Top Ten Measure 9: Long Life, Loose Fit

Long life, loose fit: The building was designed for long life and loose fit. The main structure and it's building skin was designed to be highly durable and easy to maintain to ensure that the facility is functional for at least 100 years (and likely decades longer). All interior partitions are demountable and designed to be reorganized with ease to accommodate churn or building changes; pre-wired units that utilize "plug and play" technology also mean that cabling changes can be made easily. A raised-floor with under floor air distribution allows individual temperature controls as well as workplace reconfiguration and will accommodate changes to the electrical system over time.

Top Ten Measure 10: Collective Wisdom & Feedback Loops

Collective Wisdom & Feedback Loops: Integrated design: The design process began intuitively and became increasingly scientific; sketches and working models developed the initial concept, while scientific modeling tools refined preferred schemes. The fabric shading system on the east windows demonstrates the influence of science on design and this process.

Regional issues of LEED: The building incorporates natural ventilation, based on the client's interest in both the benefit and the LEED point. However, due to the hot and humid climate, the expense may outweigh the benefit of operable windows that can be used approximately 1/3 of the year.

Materials: The project was very successful in incorporating regional new and reused materials. In doing so, we recognize the additional amount of time and energy required of the design team — including suppliers and the construction team — to document products and materials.

Packages: The project was developed as two major packages (core and shell and tenant finish); while expeditious, this separation may have hindered fully integrated design and construction.

Precision: Integrated design insures precise coordination between design and construction. However, in instances where coordination was imprecise, the impact was magnified into other disciplines and trades and more difficult to resolve than in traditional buildings.

Section 5 - Project Economics

Finance: In late 1996, an international design competition was conducted to generate interest in creating a permanent home for the School of Nursing. A year later, the Texas Legislature was convinced to support the project; it subsequently authorized $17.5 million in bonds for the School, and the institution announced a $10 million capital campaign. The combined amount, $27.5 million, was less than half of the total project budget estimate of $63 million, which included the deconstruction of a substantial building and the relocation of 18,000 square feet of wet laboratory program space to provide a site for the school. The program for the building was then altered to include a student community center.

In 1999, a plan was devised to enroll the entire student population in assessing a general use fee upon themselves through incremental adjustments. Due to much open dialogue, this plan was approved, securing an additional $32.5 million in bonds to finance the project; the institution itself funded the remaining $3 million from cash reserves. The student support for this measure, combined with the groundbreaking ideas of the client, were key to the building being built. During design, there was a conscientious effort to design to the budget available.

Cost and payback analysis: The building owners conducted a “building systems assessment" that reviewed and assessed the universe of design and building tactics based upon their full-cost and several fundamental principles: stewarding resources; doing no harm; benefiting others (present and future); and respecting the environment (with emphasis on CO_2 balancing).

The process was informed by over 60 experts and included detailed full-cost exercises. The owners understood that meeting their fiduciary responsibilities didn’t end with the building’s design and construction costs–which represent less than 20% of the total cost of ownership. Their mantra was “you can’t sustain it if you don’t maintain it.” The results of the studies supported the long-term advantages of an asymmetric envelope design, underfloor air distribution, daylighting, rainwater harvesting, waterless urinals, and demountable walls.

For example, demountable partitions were critical to optimizing flexibility and savings over the life of the building. The manufacturer advised in decision-making regarding finishes and module sizes for the integration of the floor, carpet, furnishings, and lighting in an economical way—and planned on a 40-inch module, making it efficient to switch door and wall panel locations. All device locations were predrilled for coordination during installation and having no panel-to-panel electrical connections allow pop-in, pop-out ability.

Section 6 - Process and Results

PreDesign: An open, integrated process was the key element that transformed the design from an idea into the building that exists today. To fully comprehend what was possible, an unusually high level of participation from the client and users was required; 17 firms and an equally large client group worked in collaboration from the beginning. At every level, preconceptions and concepts for what a building like this might traditionally be were rigorously tested to insure that the strategies were consistent with the vision for constructing a building that would last at least 100 years.

The project began with a series of goals set by the University for creating a building and landscape that would be a model for its integration of building purpose, program, and academics. The underlying principle was to realize savings that would make it possible to redirect dollars otherwise required for infrastructure to the core mission of the university – the cultivation of knowledge. Based on these principles, the building was designed and constructed:

• To endure for more than 100 years, therefore facilitating adaptive reuse.

• To uplift the spirit of the dwellers with interior spaces that capitalize on daylighting, radiate simple elegance, reflect timeless design, and are welcoming and comfortable.

• To respect its surrounding and thus create an academic climate that inspires creativity, collaboration, collegiality and learning.

• To minimize the negative effect of the structure on its natural site.

• To contain the best workmanship by partnering with companies that use only proven, state-of-the-art equipment and materials.

• To sustain economic efficiencies by mandating that utility costs be 70% less that the UT-H

School of Public Health; and concurrently, targeting actual construction costs not to exceed 105% of the cost of a conventionally constructed building.

• To incorporate all natural opportunities presented by the physical site and to design economy into long-term maintenance and operational costs.

• To extol the indigenous environment by landscaping exterior spaces with plants and trees that are natural to the Houston area, and require minimal care, chemicals and water.

• To focus on non-toxic materials and to take advantage of renewable energy sources wherever health and economy are issues. To arrive at these decisions, life cycle costing will be applied.

• To use natural, recycled, and reclaimed materials from sources and manufacturers in Texas to the fullest extent possible.

• To incorporate into our infrastructure systems that ensure efficient use of resources and drive recycling.

The team understood that various building systems and their components contribute collectively and individually to the project's sustainability and thus, the design became deeply rooted in this interconnectivity.

Design:

The design of the building itself was an inclusive process that utilized a holistic design methodology. The initial kick-off meeting gathered over 50 participants—each necessary in evaluation of program or representation of a specific discipline. In that initial session, formulation of the concept began.

The design of the building's envelope contributes to the design team and university goals in specific ways. The building's envelope contributes to all six of the major categories used to evaluate buildings in the LEED process: Sustainable Sites; Water Efficiency; Energy and Atmosphere; Materials and Resources; Indoor Environmental Quality; and Innovation and Design Process. The following is a description of the project's building envelope design as it relates to each of those categories.

Sustainable Sites For the expansion of the School of Nursing, limited sites were available on the dense Texas Medical Center (TMC) campus. Rather than develop a distant, greenfield site, the University redeveloped a small, underbuilt site in the heart of the TMC. The storm water management design reduces run-off through the use of paving systems and green roofs and by gathering and storing water for later use. There is also a reduction of heat islands on the site through green roof areas (the fifth façade).

Water Efficiency No potable water is used for irrigation or toilet flushing, and integration of the multiple water reduction strategies amounts to a 48% reduction in total water use for the building. Rainwater is harvested from membrane roof areas and stored onsite in (5) 30,000 gallon storage tanks.

Energy and Atmosphere The building has a sophisticated envelope design that has been tuned to respond to the climatic conditions in Houston. Glazing percentages were studied and performance was optimized through shading, light reflecting devices and specific properties based on application (low-e coatings, low u-value, spectrally selective glass). The daylighting design significantly reduces the amount of supplemental lighting required during the daytime.

A high performance skin is employed, modeled on rain-screen principle design, with a high

	performance vapor barrier, and a highly insulated wall section. The roof also has a high reflectivity, low emissivity membrane roof and highly insulated roof section. Materials and Resources The building utilizes locally sourced materials; the stone base, brick walls, and cypress siding all come from within a 500 mile radius. A high recycled content was specific in new materials such as exterior aluminum panels, window framing, structural steel and fly ash in the concrete. Salvaged materials, including reclaimed brick and sinker cypress, were used on the lower levels. Indoor Environmental Quality The building maximizes the use of daylighting; aluminum light shelves on south and west facades reflect effective daylight and reduce glare, as do and translucent sailcloth fins on the east façade. Operable windows allow users to control natural ventilation and breezes. Low VOC paints, carpets, adhesives and sealants were used throughout. Innovation and Design Process In addition to the overall goal to construct a 100-year building, exit stairs were moved to the exterior and are naturally ventilated, shared support facilities reduce the building square footage, and the building is highly pedagogical, placing on display many of the systems that are integral to its sustainability – rainwater harvesting, future photovoltaic array, daylighting components, innovative materials, etc.
Construction Process:	Healthy, resource efficient and durable materials play a key role in the facility's design. A key goal was to achieve a building with a minimum 100-year life and minimal maintenance requirements. The building structure is primarily high flyash concrete (48% replacement of Portland cement) and 80% recycled content structural steel. Cladding materials include locally salvaged brick, reclaimed Cyprus logs (siding) and 92% recycled content aluminum panels. Using Baseline Green, a sophisticated LCA tool, it was determined that the building's embodied energy and environmental impacts were reduced by: • 2,440 lbs of toxic releases to air • 300 lbs of toxic releases to water • 1,808 tons of CO_2 releases (avoided due to flyash) Paints, adhesives, sealants and furniture systems were selected with low VOC content. Impacts to human health are improved with occupant control over thermal comfort using an under floor air distribution system and operable windows. 75% of the buildings total construction waste was recycled or diverted. Deconstruction of the building previously on site resulted in 4,753 (of 6,162) tons of demolition waste recycled. This included returning 1,000 square yards of carpet to Dupont and 14.3 tons of ceiling tile to Armstrong. 50,000 bricks were salvaged for future use.
Operations/maintenance:	From an operational standpoint, the building is highly pedagogical, placing on display many of the systems that are integral to its sustainability, including rainwater storage tanks, daylighting components, and innovative materials. The client's mantra was "you can't sustain it if you don't maintain it, " which recognized that design and construction costs are less than 20% of the total cost of ownership. The results of this philosophy and resulting life-cycle studies supported the long-term advantages of flexible, durable systems including: moveable walls; underfloor air distribution; aluminum, stone and brick cladding; and building mounted systems for periodic cleaning of the building's exterior.
Commissioning:	The project team conducted baseline commissioning, ensuring that all building systems perform interactively according to project requirements and operational needs. Beginning in the design phase, the team documented project requirements, continuing through

construction. The client is currently procuring ongoing building commissioning in order to provide a verification of performance for the LEED submittal requirements.

Measurement & verification/ post-occupancy evaluation:

Rating System Name: U.S. Green Building Council LEED-NC,
Version: v2
Rating Date:
Score or rating level:
Credits:

Sections 7: Visuals

Exhibit A

nursing-site.jpg

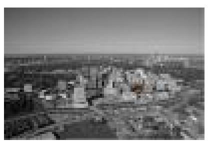
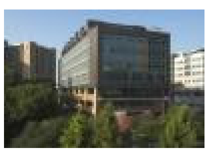


Image has been scaled down. Click it to view actual size...

Description: The School of Nursing in context

Exhibit B

Nursing-park.jpg



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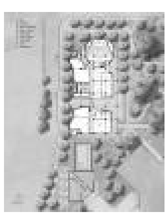
Description: The building sits at the west edge of Fay Park

Exhibit C

Nursing_siteplan.jpg



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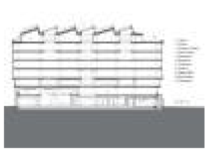
Description: The site plan

Exhibit D

Nursing-section.jpg



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Description:	The Building Section

Exhibit E

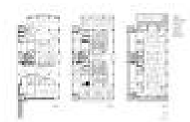
Nursing-plans.jpg	
	Image has been scaled down. Click it to view actual size...
Description:	Typical Floor Plans

Exhibit F

Nursing-west tall.jpg	
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Description:	The central stair and breezeway circulation

Exhibit G

Nursing-east facade.jpg	
	Image has been scaled down. Click it to view actual size...
Description:	The building's east facade, with sunshades

Exhibit H

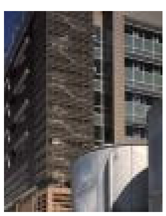
Nursing-cisterns.jpg	
	Image has been scaled down. Click it to view actual size...
Description:	Cisterns are used to store collected rainwater

Exhibit I

Nursing-atrium.jpg	
	Image has been scaled down. Click it to view actual size...
Description:	Three-story atria allow access to daylight

Exhibit J

Nursing-west facade.jpg 

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Description: The breezeway provides a connection to the park