Suburban Hospital

Modification of Existing Special Exception

Architectural, Mechanical, and Electrical Design Report

March 2008

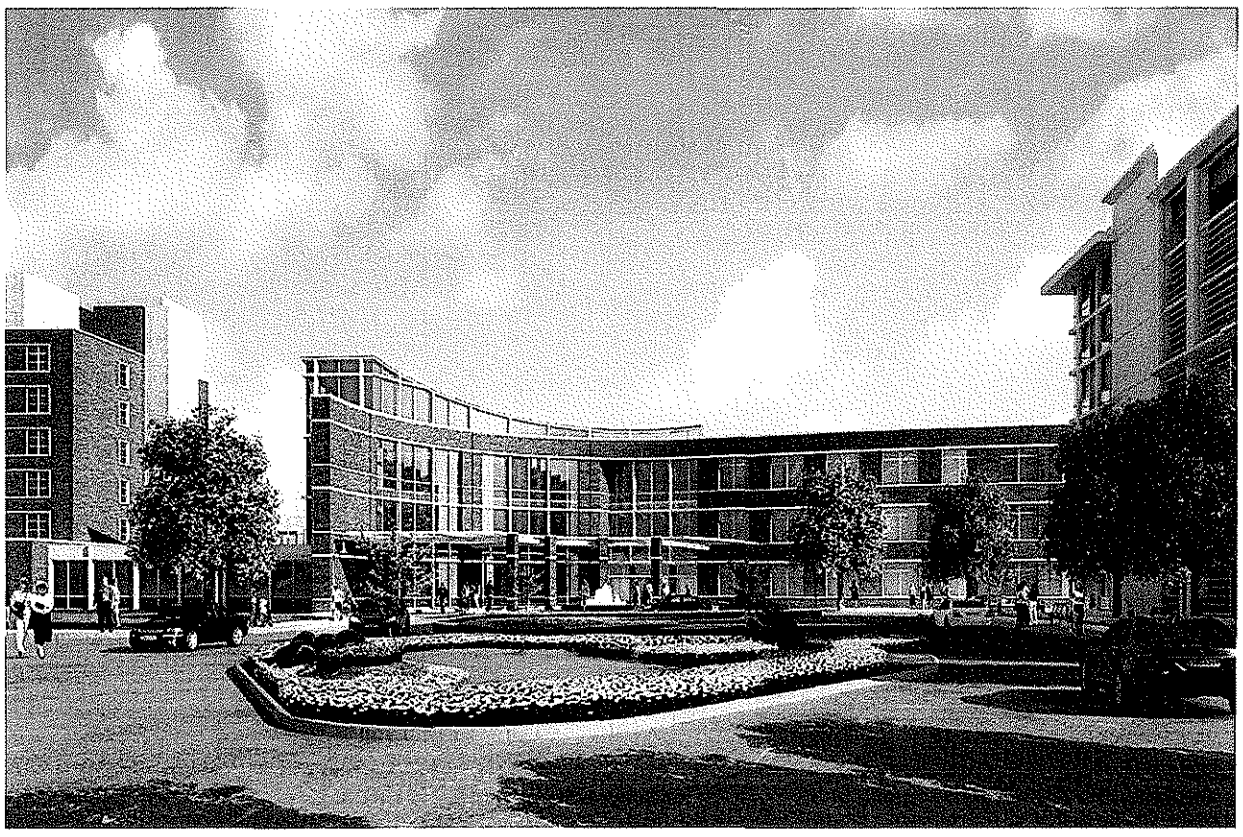

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Exhibit "R"

Suburban Hospital

Architectural, Mechanical, and Electrical Design Report

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I. Background and Introduction

BACKGROUND

The following Architectural, Mechanical and Electrical Design Report has been prepared in conjunction with the filing of Suburban Hospital's (the "Hospital") special exception modification request ("Modification") to provide an overview of proposed physical facility improvements and explain how these improvements satisfy the requirements of Section 59-G-1.2 and 59-G-2.31 of the Montgomery County Zoning Ordinance (the "Zoning Ordinance"). While the Hospital has a reputation for providing high quality health care services, the condition of its aging facilities has created the need for substantial improvements to its facilities to sustain its mission to provide outstanding health care services to the community it serves.

COMMUNITY PANEL FINDINGS

In a report dated November, 2005, developed by a panel of diverse community members interested in the sustainability of the Hospital (the "Community Panel"), it was noted that:

> "Suburban Hospital is bursting at the seams. Much of the facility is approaching 50 years old. Its spaces are insufficient to accommodate its current patient load; it must often divert ambulances to distant healthcare facilities. Its physicians and staff work in cramped, outdated quarters. Its infrastructure and physical plant are aging. Its campus is geographically dispersed, creating inconvenience for patients, visitors, physicians, and staff. Remarkably, the Hospital retains its reputation for outstanding clinical care despite these circumstances because of the sheer talent and commitment of its physicians and staff."

The Community Panel determined that this situation, if left unaddressed, would only worsen. The population within the Hospital's service area is growing and becoming more diverse, thereby increasing the challenge for Suburban Hospital to adequately serve its community from a clinical, economic and social standpoint. Among other

issues, the community faces the possibility of a major, region-wide man-made emergency or natural disaster for which the Hospital, as the only designated trauma facility in Montgomery County, must be prepared. At the same time, recruiting and retaining the highest quality physicians and healthcare workers, from a limited and competitive supply, is becoming increasingly difficult, given the Hospital's physical condition and lack of staff amenities, most specifically parking. Complying with ever changing, complex insurance and regulatory requirements will also become more taxing, and escalating healthcare costs show no signs of abating.

The Community Panel indicated its belief that these conditions are undeniably real and present, generating a pressing need for the modernization and expansion of the Hospital. Hospital patients, visitors, staff and physicians see this need every day in the cramped working quarters, outdated patient and surgery facilities and inefficiently arranged floor plans of the existing facility. The community's service and business organizations, law enforcement, Fire & Rescue, and other public service agency personnel working closely with the Hospital also see this need on a daily basis. For example, the Hospital is the only major hospital in the region where general visitors, patients, emergency room patients, ambulance drivers, and helicopters all enter a facility in the same area – with little to no separation between these disparate users.

To evaluate these needs, an in-depth Facility Condition Assessment was conducted by Ellerbe Beckett for Suburban Hospital in 2005. This Assessment compared the Hospital's campus and facilities to like healthcare institutions across country. The Assessment was updated in 2007 to reflect newly adopted regulations in the state of Maryland that govern hospital facilities, specifically the Guidelines for Design and Construction of Health Care Facilities, adopted in November, 2006. These nationally

recognized regulations establish the benchmarks for components that define the "environment of care" of health care facilities throughout the state and country. The regulations recognize that the built environment has a profound effect on the health, safety, and welfare of patients, staff and visitors of any health care facility, and establish minimum standards and recommendations to guide the design of such facilities. Using these specifications, functional space sizes / areas at the Hospital were compared to recently completed facility improvement projects at comparable hospitals, and to the current facility. This analysis confirmed a number of space deficiencies at the Hospital when compared against these standards.

In summary, if the entire hospital were to be replaced today, the building would need to be sized at approximately 250,000 square feet more than its existing size to meet current standards. Because this modification only includes the replacement of a portion of the Hospital's facilities, however, the increase in area that is attributed to meeting current standards in approximately 135,000 square feet. This square footage does not accommodate growth in programs, but rather accommodates space needs such as (1) private, inpatient rooms, (2) operating rooms sized to accommodate state-of-the-art equipment and procedures, (3) emergency and treatment spaces that are sized to meet standards, (4) diagnostic spaces sized to accommodate today's equipment, and (5) spaces that comply with the requirements of American's with Disabilities Act Design Guidelines. For example, the average existing patient bed at the Hospital occupies approximately 110 square feet per bed in a semi-private configuration. In today's hospitals, that same bed usually occupies as much as 310 square feet per bed to accommodate the private room, associated equipment, nursing care space at bedside, and family support space within the room. In fact, private rooms are now mandated by the state regulations in new construction, unless a specific waiver is granted. Diagrams

and graphics depicting the difference between the Hospital's current conditions and the standards of the industry today are included in the Appendices attached to this report.

NEIGHBORHOOD CONCERNS

While attempting to address its needs, the Hospital is cognizant of its location in diverse surroundings, with institutional, residential and commercial elements. The proposed plan has therefore been developed in a manner that addresses the nature and concerns of its neighbors, while also respecting the Hospital's critical need to improve its infrastructure in a manner that meets the healthcare needs of the community.

COMMUNITY PANEL RECOMMENDATIONS

The Community Panel agreed that redevelopment of the campus should incorporate the principles of good land use planning, traffic management, and appropriate architectural and landscape design. Specifically, the Community Panel recommended that the Hospital should (1) emphasize placement of new structures close to Old Georgetown Road frontage, (2) consider alternatives to on-site development, where feasible, and (3) to the extent possible, take into account the ultimate growth of the Hospital in terms of its facilities and services. A majority of the Community Panel also agreed that, to upgrade and modernize its campus, facilities, and equipment and to assure continuing excellence in patient care and service, the Hospital should (1) create space on the campus that is flexible and adaptable, not only with regard to direct patient care but also with regard to infrastructure (i.e., laboratories, administrative offices, physician offices, support functions, equipment, physical plant, etc.); (2) design conditions and amenities to attract the best and brightest physicians and staff; (3) unify the campus to facilitate responsive patient service and to optimize architectural functionality; and (4) create adequate on-site parking to minimize inconveniences and disincentives for patients, staff, and visitors while encouraging transit options.

Additionally, the Community Panel developed a set of goals and objectives to be utilized as design criteria by which to judge concept-planning options considered by the Hospital. These design criteria are as follows:

- Provide long-range land-use predictability
- Allow the Hospital to maintain its high quality service throughout any construction
- Allow for a phased approach that is feasible, based on the Hospital's priorities
- Provide compatibility with existing surroundings
- Contain as much traffic as possible within the Hospital campus, without impacting the neighborhood.
- Improve access / circulation for people in vehicles as well as pedestrians
- Provide adequate parking
- Improve helipad condition
- Provide flexibility to accommodate future changes
- Improve functional interrelationships to enhance the Hospital's operations
- Enhance NIH Connection and improve emergency preparedness
- Provide office and support space to support physician practices
- Enhance security

SUMMARY OF PROPOSED IMPROVEMENTS

Utilizing the recommendations and design criteria established by the Community Panel to the extent possible, the Hospital developed the requested Modification and is seeking approval of the following improvements to its campus:

- *Main Hospital Addition:* A four-story (plus additional cellar), 62.7-foot high, hospital "Addition" with a gross floor area of 235,597 square feet. The functions in the Addition will include surgery, nursing care (inpatient beds), pre-admission testing,

central sterile support, patient registration/admissions, main public entrance, education areas, physician offices, patient observation areas, gift shop, and other miscellaneous hospital support functions. The Addition will be connected to the existing main hospital at Levels 1, 2 and 3.

- *Parking Garage:* A multilevel parking garage that includes 1,196 parking spaces, with 10 levels total (2 underground, 1 partially underground and 7 above ground), with a maximum height of 68.3 feet.
- *Site Work:* (1) The development of new vehicular (including bikes) and pedestrian entrances and pathways to support the proposed building improvements, (2) the development of a comprehensive campus green area and landscaping plan, creating new parks, gardens, green spaces and plazas to unify and enhance the compatibility of the Hospital campus with the surrounding neighborhood, and (3) the modification of existing utilities to accommodate and service the proposed building improvements.
- *Building Utility Improvements:* Development and enhancement of the Hospital's existing mechanical and electrical infrastructure (chillers, boilers, generator, medical gas plant, etc.) to support the proposed building improvements.

II. Site Improvement Proposal

A. GENERAL:

The Modification is intended to add the functional space necessary for the Hospital to deliver state-of-the-art medical services to the community in compliance with current healthcare standards. The Modification involves the improvement of two key programmatic functions that require significant infrastructure upgrades, including: 1) the expansion of the Hospital's main core building; and 2) the new parking structure.

The design challenge is to incorporate these necessary functions into the existing facilities in a manner that is operationally efficient and respectful of the surrounding community uses. The well-established principles of campus planning, good land planning and healthcare design considerations dictated placement of the new structures in the middle and eastern portion of the Campus away from the adjacent residential neighborhood. However, this possibility was limited by the divide Lincoln Street created among the Hospital's properties (with approximately 9.2 acres on the south side of Lincoln Street and approximately 5.8 acres on the north). Based on careful analysis, it was determined that abandonment of the block of Lincoln Street between Old Georgetown Road and Grant Street and consolidation of the Campus was critical to accommodating the physical building dimensions necessary for the proposed clinical spaces.

Specifically, the functional program for the Addition dictates the need for a substantial contiguous single floor area of approximately 65,000 square feet to accommodate the care of patients requiring surgery. This functional program has been established in conformance with the 2006 Guidelines for Design and Construction of Health Care Facilities, with a primary emphasis on enhancing the health, safety and welfare of the patients, staffs, and visitors of the health care facilities operated by Suburban Hospital, as noted above. Surgical functions include all operating rooms, post anesthesia recovery rooms, pre-operative rooms, and related support functions. The proposed Addition is located on the only portion of the site that can accommodate this footprint while also connecting to the existing facilities in a manner that enhances operational adjacencies.

In addition to enhancing the clinical operations of Suburban Hospital, the proposed building location (a) provides an important buffer and separation from the residential

community, (b) facilitates a safe and efficient circulation pattern within the building and on the site, and (c) allows development at lower heights and in the center and eastern portion of the site, away from the existing residential neighborhood, while still accommodating the critical physical building dimensions necessary for the proposed clinical spaces noted above. See Special Exception Site Plan included in the Modification as Exhibit "K".

1) **Historical Cohesiveness:**

The history of the Hospital, together with its confronting institutional neighbor, National Institutes of Health (NIH), to the east, and the single-family residential community to the west, goes back more than sixty years. Over the years, the Hospital has developed its facilities with a goal of being compatible with its surroundings, striking a balance between the institutional and residential qualities of its immediate environment. The scale, masonry materials, and detailing of the existing building, and attention to quality landscaping, has allowed the Hospital to fit well in this setting. The proposed design direction recognizes the success of the past, along with the indigenous context of such building materials as brick and limestone accents. To blend these influences into a cohesive solution, the Addition is designed with a human/residential scale "base" of finely detailed brick with stone accents, a building "body," or primary floors, with functional openings, and a main entrance component that addresses the institutional/public side of the campus in a manner that is distinct when compared to the sides that are viewed from the residential neighborhood. In comparison, the sides of the building that face the adjacent residential properties are stepped down in height, and detailed in a manner that respects the lower scale of the surroundings. The parking structure is also designed to be compatible within its context, employing masonry elements and details on the façade in a manner that breaks up the scale of the building.

The parking structure is also articulated on its north (residential) side to reduce the impact of the building mass. See Exterior Elevations included in the application as Exhibit "N".

The design and building materials, therefore, draw appearance relationships with the established context of the surrounding institutional and residential structures. It is respectful of its context yet self-confident by articulating a clear, coherent new design vocabulary that enhances, rather than overwhelms, the existing facility.

2) **Scale / Relationships:**

Major importance has been given to de-emphasizing the scale of the Campus perimeter, which has been achieved by internalizing the majority of business activity, controlling the apparent building size facing the residential neighborhood by reducing the scale of the proposed buildings on the sides of the structures that are adjacent to them, and creating an attractive, comprehensive, and cohesive landscaping plan that creates substantial screening and buffering benefits. Campus planning and building placement has also been conceived to reinforce the notion of a primary access zone that fronts on Old Georgetown Road. The new entrance to the Hospital is designed in recognition of the importance of direct relationships between patient / visitor / community access and the proposed layout for the new entrance plaza is conceived to provide enhanced safety and protection for patients, visitors and staff.

B. EXISTING IMPROVEMENTS:

1) **Existing Buildings**

- Lambert Building 17,000 S.F.
- Main Hospital (gross floor area) 323,100 S.F.
- Single-Family Detached Structures 32,561 S.F.

2) **Surface Parking**

- Existing Surface Parking 462 spaces

3) **Cellar Space**

- Main Hospital 115,000 S.F.

1) **Existing Improvements.**

Existing improvements will be impacted by the proposed facility improvements as follows:

- Lincoln Street (Old Georgetown Road to Grant Street) is proposed to be abandoned to unify the campus, creating a contiguous campus of approximately 15.2 acres to accommodate the Modification and to provide a consolidated and improved (two lane in / two lane out) access drive for the campus.
- The existing Lambert Building, located in the northeastern portion of the property, will be demolished to accommodate a new parking structure.
- Existing functions in the Lambert Building will be relocated on the Hospital Campus.
- The existing parking garage will be demolished to accommodate a new parking structure.
- 23 residential structures will be demolished to create additional open space, gardens and landscaped areas, as well as space for the Addition and new site improvements.
- The Hospital's existing main structure will remain in place, but the existing main entrance will be converted to a dedicated emergency room entrance. The new entrance will provide safe access for patients and visitors, with a direct connection to the parking garage, without requiring the crossing of a public street.

- The existing helipad will remain in place, but safety conditions will be improved by moving the main entrance away from the helipad. The existing main entrance presents a safety challenge because it is located directly under the helipad.
- The existing power plant located in the cellar of the existing Hospital building will remain in place and beexpanded into the cellar of the new Addition. The expansion of this space will allow the Hospital to accommodate a majority of the mechanical systems needed to support the Addition (including air handling equipment) in one protected location, rather than locating such systems on the roof, thus mitigating noise impacts.
- Existing surface parking and driveways will be re-designed to provide better onsite vehicular circulation, and accommodate a new consolidated main entrance to the Hospital, new parking structure, new loading dock access and modifications to the existing hospital.
- A dedicated ambulance-only entrance-only drive will be created, with access off of McKinley Street, approximate to Old Georgetown Road.
- A new service vehicle entrance will be developed with access off of McKinley Street. The drive will be located as close to Old Georgetown Road (and away from the neighborhood) as possible.
- Landscaping, gardens, plazas, green areas, pedestrian walkways, and bikeways will be used throughout the site to enhance overall site appearance, foster a healing environment and improve the compatibility of the Hospital's Campus with its surrounding neighborhood. Additional sidewalks will also be provided around the perimeter of the Campus to invite visitors to enjoy the Hospital gardens and to enhance public safety by separating vehicular and pedestrian traffic.

C. FACILITY IMPROVEMENTS / ADDITIONS AND MODIFICATIONS:

The facility improvements for the Hospital are centered around the following primary programmatic functions:

1) HOSPITAL ADDITION

a) SURGICAL SERVICES

Existing conditions within the surgery department are characterized by the following:

- Inadequately sized rooms (many sized below current code requirements)
- Inadequate support space
- Inadequate space to readily accommodate HVAC and electrical service needs
- Inefficient layout
- Physical limitations to accommodate specialized programs or equipment, including anticipated innovations in imaging and robotically assisted surgery
- Inadequate staff space
- Poor location for patient and service access (5th floor) with poor adjacencies with the emergency department.

To address these deficiencies, the Hospital has focused on the development of a new surgery suite in the Addition. This surgery suite design, shown on the Building Floor Plans included in the application as Exhibit "M", will allow the Hospital to replace the existing fifteen (15) operating rooms in the main building with new facilities in the Addition that are appropriately designed and sized to accommodate the complicated surgical cases that are commonly performed at the Hospital. This new surgery suite also includes a post-anesthesia recovery unit (PACU), and related support spaces - all located on a single level of the building. As noted above, the space, configuration and locational requirements associated with these functions alone dictate a footprint of at least 65,000 square feet on one contiguous floor. Associated pre-surgical diagnostic

and testing services are also located in close proximity under the proposed plan, one floor above the surgical level. The location of the surgery suite on the first level also allows for a direct connection to the emergency department, thus improving safety for transferring patients with traumatic injuries and critical conditions directly into the operating room when needed.

b) PATIENT CARE SUPPORT SPACES

In addition to, and in support of, the surgical and diagnostic facility improvements discussed above, the Hospital needs to provide support services within the Addition. These improvements will include the development of a new patient access entrance, patient registration area, pre-admission testing and diagnostic service areas, patient observation area, educational area, and central sterile support area. See Building Floor Plans, Exhibit "M".

c) PATIENT CARE BED IMPROVEMENTS

The existing conditions characterizing the Hospital's in-patient bed capacity are as follows:

- High ratio of semi-private to private medical/surgical patient rooms. Semi-private rooms are not permitted by current health care facility development guidelines.
- Rooms that do not meet current healthcare facility guidelines and codes, and do not comply with ADA accessibility guidelines.
- Rooms that do not accommodate new technology.
- Severely constrained opportunities to renovate or expand in-patient bed capacity within existing hospital without sacrificing numbers of beds and operational efficiency of patient care units.
- Limited space for family or other support individuals.

The Addition therefore will provide for up to 108 private patient care rooms designed to meet current standards. See Building Floor Plans, Exhibit "M".

The shift from semi-private to private rooms will: 1) improve safety by limiting the potential for infection and improving contact isolation measures, 2) improve operational and utilization efficiency that is typically hampered by the limitations of semi-private rooms (separating male and female patients / separating non-compatible patient types, etc.), 3) improving patient privacy, 4) improving the patient family experience, thus improving outcomes.

Importantly, the addition of these new private beds and movement of some patient beds from the existing Hospital to the Addition will also allow for currently cramped spaces in the existing Hospital to be right-sized and brought up to current standard of care requirements. Those areas remaining in the existing hospital as in-patient rooms, coupled with the new patient care rooms in the Addition, will also allow the Hospital to respond to increased in-patient demand, allowing for an ultimate increase to a maximum of 294 in-patient beds.

d) PHYSICIAN OFFICES

As shown on the Building Floor Plans, Exhibit "M", the Addition also includes approximately 38,000 square feet on the second floor for physician service and office space. The placement of these functions within the Addition allows for direct patient, staff and physician access within the main facility.

e) POTENTIAL PHASING OPTION

It is currently anticipated that the improvements shown in the Modification will be constructed together. However, construction of a portion of the nursing beds may occur

or be commenced subsequent to the construction or start of construction of the first three floors of the Addition.

f) PROPOSED GROSS FLOOR AREA SUMMARY

The following table summarizes the areas of the proposed Addition:

FLOOR LEVEL		Gross Square Feet
Lower Level 1 (Cellar – Plant & Support)	64,432	
Level 1 (First Floor – Surgery)		65,605
Level 2 (Second Floor) – Main entrance, physician office space, hospital support services		69,224
Level 3 (Third Floor) – patient rooms		51,716
Level 4 (Fourth Floor) – patient rooms		49,052
Total	64,432 SF	235,597 GSF

2) PARKING STRUCTURE

The parking requirements relating to existing and proposed improvements are identified in the Parking Demand Analysis prepared by Wells & Associates, included in the application as Exhibit "U". The proposed new parking structure has been designed to adequately satisfy current and future parking needs. The parking garage is also designed to be compatible within its context, employing masonry elements and details on the façade in a manner that breaks up the scale and mass of the building. See Exterior Elevations Exhibit "N". Further, the structure steps down on the north (residential) side to reduce the impact of the building height and mass facing the adjacent residential community. The parking structure is designed to be a "building" that fits within the context of its environment, rather than simply a parking garage. Additionally, as discussed in the Site Lighting Report, included in the application as

Exhibit "DD", special attention has been given to the design of the façade to ensure that no unwanted light spillage will impact the adjacent properties.

This new parking structure has been located along Old Georgetown Road, a major highway in an existing institutional corridor, as far as feasible from the adjacent residential neighborhood. Vehicular access to the parking structure is provided from Old Georgetown Road. The new structure is sized to accommodate 1,196 full spaces, in a 10-level (2 underground, 1 partially underground and 7 above ground), 68.3-foot high structure.

The new parking structure layout is designed to be constructed in phases so as to allow the existing parking structure to remain in place while the first phase of the new parking structure is constructed. Once the first phase of the new parking structure is constructed, the existing one can be razed and the remainder of the new parking structure can be rebuilt in its place.

3) **SITE IMPROVEMENTS**

A. ACCESS AND CIRCULATION:

1) **New Entrances:**

As stated above, the Modification proposes to relocate the Hospital's main entrance to the Addition, allowing the existing entrance to be dedicated to serve the emergency department alone. The current condition mixes non-emergency visitors to the hospital with patients and families needing to access the emergency department. A new entry plaza will be developed in front of the relocated entrance to include a vehicular drop-off loop with a continuous canopy covering and a shared pedestrian plaza space. Furthermore, by relocating the main entrance, the design limits the impact of the emergency helipad on pedestrians, who currently must walk below the helipad for

entrance to the Hospital. The new main entrance for patients and visitors will be clearly visible with a distinctive aluminum and glass curtainwall design element that will enable visitors to readily identify the main hospital access, being distinct from the emergency department access. Clear separation of circulation functions will also provide a safer, more efficient flow of traffic for vehicles and pedestrians.

2) **Entry Drive:**

The new entry drive will convert a portion of existing Lincoln Street, off of Old Georgetown Road, into a tree-lined driveway, creating an appropriately welcoming entrance to the improved facility. The drive is designed to rise to the crest of the existing Lincoln Street incline, allowing the main entrance to be situated at the existing second floor elevation. Sidewalks and crosswalks are being provided to enhance safe access to the Hospital by pedestrians approaching (1) from the bus stop on Old Georgetown Road, (2) via bicycle, (3) from the parking structure, or (4) from the adjacent neighborhood. See Pedestrian Circulation Plan included in application as Exhibit "Q". The vehicular access is being improved to provide additional inbound and outbound lanes, and a substantial landscaped median serves to control traffic in a safe and aesthetically pleasing manner. See Vehicular Circulation Plan included in the application as Exhibit "P".

3) **Surface Parking Lots:**

The Modification will reduce existing surface parking on the Property by approximately 193 spaces, and a substantial portion of the existing paved surface parking lots will be replaced with a variety of shade trees, evergreen trees, and under-story plantings that will soften the space and buffer the public view of the parking areas and existing and proposed buildings.

4) **Pedestrian Circulation:**

Pedestrian circulation, including links to the adjacent neighborhood, Bus Stops and NIH, will be dramatically improved. A tree-lined primary pedestrian spine is proposed along the entry drive that will connect Old Georgetown Road public sidewalks and the existing Old Georgetown Road bus shelter to hospital facilities and walkways, linking pedestrian and bicycle access points from the neighborhood (located to the west) with the Old Georgetown Road crosswalk at Lincoln Street. Secondary walkways will also be created where none currently exist along the Southwick Street, McKinley Street and Grant Street property frontages to enhance circulation through the community.

B. LANDSCAPE AND LIGHTING:

1) Site Plantings and Buffering:

As shown on the Landscape Plan included in this application as Exhibit "O" an aggressive planting program is proposed for the site, including installation of a substantial number of new trees that will offer shade, provide screening of structures from public view, and soften the overall campus character. Tree species will consist of native, non-invasive selections that are in character with existing plantings on the Hospital campus and the Bethesda neighborhood. Furthermore, as shown on the Compatibility Package included in this application as Exhibit "L", the perimeter of the Campus has been comprehensively designed in accordance with established campus planning principles to provide attractive buffers between the Hospital and adjacent community, maximizing compatibility between the two.

2) Site Lighting:

The Hospital has engaged a qualified lighting design firm to review existing conditions and collaborate with the architectural and engineering design team to ensure that adequate site lighting exists to provide a safe and secure environment for the Hospital's entire Campus in compliance with County standards and regulations, while causing

minimal impact on the adjacent community. See the separate Site Lighting Report included in the application as Exhibit "DD" for detailed information regarding this aspect of the proposed design.

C. SIGNAGE:

As part of the Modification, the Hospital campus, building identification, and directional "wayfinding" signage will be updated. All site signage will be designed in compliance with applicable codes and regulations, and with respect for the surrounding residential environment. The signage is designed to be site-mounted at a low, pedestrian height and will compliment the campus design character. Signage lighting will be at minimum intensity levels, consistent with safety requirements, with provisions to control glare and minimize lighting visible to surrounding residential neighbors. See the Existing and Concept Signage Plans that accompany the special exception application as Exhibit "GG" for additional information.

D. ACOUSTICAL AND VIBRATION CONTROL:

The Hospital has engaged the services of a qualified noise and vibration expert to model the noise on the site that will be generated by the proposed improvements and evaluate any impacts from vibrations. See the Noise and Vibration Impact Analysis, included in the application as Exhibit "AA" for additional information.

III. Infrastructure and Physical Plant

A. MECHANICAL SYSTEMS:

1) Infrastructure

The mechanical systems associated with the Modification have been designed to meet the programmatic needs of the proposed facility improvements, and to conform with County Noise Ordinance standards. Refer to the separately bound Noise and Vibration

Impact Analysis included in the application as Exhibit "AA". The cooling requirements of the Addition will require the installation of a new 1300-ton electric centrifugal chiller to be installed within the cellar mechanical room. The chilled water distribution will be primary/secondary and integrated with the existing chilled water plant. Two new variable flow secondary pumps will be provided in the basement to distribute the chilled water to the new air handling units. Two primary chilled and condenser water pumps will be provided for the new chiller. A nominal 1300-ton dual cell cooling tower will be provided and piped to the chiller. The cooling tower will be located on grade at the rear of the building, adjacent to the loading dock. The cooling tower will be provided with appropriate sound absorption baffles, water baffles, and variable frequency drives to minimize the sound power levels.

The heating, humidification, domestic hot water, and process steam requirements for the Addition will be met by the installation of a new 24,000pph (pounds per hour) high pressure steam boiler installed within the upper level of the existing cellar mechanical room. A new boiler will be installed in the space that the existing emergency generators currently utilize and will become available with their relocation to the cellar in the Addition. An eight-inch steam main will be extended to the existing steam header within the existing boiler room for redundancy. The existing dearerator will be utilized to provide properly treated feed water to the new boiler. Two new feed water pumps will be required for the new boiler.

A two-stage steam reducing station will be required to provide 60-pound steam to the process loads and 15-pound steam to the heating plants. The humidification will be provided by a clean steam generator that will be fed from the 60-pound process steam. Make up water to the clean steam generator will be provided with a separate water treatment system.

The heating system for the Addition will be comprised of two steam to hot water convertors with dual variable speed pumps. Each convertor will be sized for 60% of the total heating load. The domestic hot water requirements will be met by two semi instantaneous hot water generators. Hot water recirculation pumps will be utilized to maintain circulation within the system. The incoming water and fire service will enter into the cellar level of the Addition within a water vault room, and a separate fire pump room. All central medical gas systems will also be located within the cellar level. Vacuum pump and medical air packaged pump sets, as well as nitrogen and nitrous oxide bottle storage will be centralized.

Six new custom air handling units will be provided and located within the cellar of the Addition. These units will be equipped with dual supply air fans to provide redundancy. In addition, units will be ducted into a headered arrangement to provide an increased level of redundancy. The following is a description of the units, their capacity and the areas served:

AHU-1A & 1B – Cellar, first thru fourth floors, west portion of the addition – 75,000CFM each

AHU-2A & 2B – First thru fourth floors, north and central portions of the addition – 62,000CFM each

AHU-3A & 3B – Operating Rooms and Central Sterile Supply – 45,000CFM each

Duct-mounted vane axial fans equipped with variable frequency drives will be provided for each air handling unit. Their return fans will also be headered for redundancy similar to their associated supply systems. The supply and return duct systems will be medium pressure with air terminal devices installed to control floor pressurization.

Three centrifugal fans, installed within housings, will be installed on the roof of the Addition. One fan will be positioned on each of three portions of the proposed Addition

for general duty exhaust. The housings will be equipped with energy recovery coils that will be piped to the air handling units within the cellar mechanical room. The energy recovery system will transfer energy from the constant exhaust air into the minimum outside air sections of the air handling units. This energy recovery system will utilize a 30% glycol solution to prevent freezing of the coils. Two isolation room exhaust systems are also required and will be located on the roof of each portion of the Addition.

Three existing underground fuel tanks will be replaced. Two new 20,000-gallon replacement tanks are required for the boilers and generators, respectively. The existing 10,000-gallon generator tank that was installed as part of the recent (2001) generator plant expansion may be relocated and reused. The existing tank would require cleaning and testing prior to its converted usage. The tanks will be located underground in the vicinity of the loading dock area.

2) **Hospital: Modifications and Additions**

Minor modifications to the existing mechanical, electrical, and plumbing systems will be required where the Addition connects to the existing hospital building. An existing mechanical room located adjacent to the proposed main entrance will be eliminated and will require that the existing duct distribution be served by a new unit or connected to the new medium pressure duct risers located adjacent to the new entrance lobby. Miscellaneous plumbing risers, piping, and electrical conduits will be affected.

3) **Parking Structure**

The parking structure will be ventilated in accordance to the International Mechanical Code (IMC) 2003. Fire protection will consist of a stand-pipe and pre-action wet pipe sprinkler system designed in accordance with NFPA.

B. ELECTRICAL SYSTEMS:

1) Infrastructure

The incoming normal electrical service will be sized for the future requirement of 4,000 A 480/277 volt power to be provided by PEPCO, in compliance with the National Electric Code. A twenty-conduit duct bank will be required from the service vault to the new normal power room within the cellar of the Addition. A 2,000 A switchgear will be installed. Emergency power will be provided by the addition of a new 1,000 KW generator that will be connected to the existing paralleling gear within the cellar of the existing building. The new generator will be installed within a new generator room located within the cellar of the Addition, added to the two existing 800 KW units.

2) Hospital: Modifications and Additions, Power and Lighting

Normal power distribution will originate from the new cellar switchgear. Power will be distributed at 480Y/277V in accordance with the National Electrical Code. A normal power bus duct will be provided from the cellar of the Addition to the fourth floor. The normal power bus duct will be tapped at each floor to serve a smaller (400 amp) distribution panel, which will also serve branch panels via dry type transformers. All branch circuit panelboards and transformers will be located within dedicated electrical closets. Power for air handling units, chillers, boilers, etc., will be served directly from the Switchgear or via dedicated distribution panels.

Emergency power will be provided from the existing paralleling switchgear located in the Hospital's existing cellar. An additional emergency generator will be required and added to the existing lineup of two, 800KW. A 1600A emergency power distribution switchboard will be provided in the new emergency switchgear room. Three automatic transfer switches (Life Safety, Critical, and Equipment) will be provided to switch utility power to generator power in case of utility failure. Each branch of emergency power will

have an associated distribution panel. A critical emergency power bus duct will be provided from the cellar of the Addition to the fourth floor. The critical power bus duct will be tapped at each floor to serve a smaller (400 amp) distribution panel, which will also serve branch panels via dry type transformers. A small Life Safety panelboard (60A) will be provided on each floor. Equipment branch emergency power will only be required in the cellar and penthouse.

The design criteria for health care facility lighting is based on a variety of factors related to patient care and comfort. Of course, the quantity of illumination, known as illuminance, is critical to the proper diagnosis and treatment of patients in all functions and occupancies. Minimum illuminance levels (in footcandles) are identified in "Lighting for Health Care Facilities", prepared by the Illuminating Engineering Society (IES). Other factors to be considered include the color of light, room surface reflectances, visual comfort, and energy usage. In areas in which patient exam and treatment will be administered, the color temperature of the lighting systems is very important. In general, 3500 degree K fluorescent lamps will be utilized to provide the best color rendition available. Visual comfort with respect to the lighting system includes minimizing glare, flexible lighting levels for multiple tasks, and an integration of the lighting with the surrounding finishes. Patient area lighting will consist of several sources to enable a variety of visual tasks. Typically, this includes a form of exam lighting over the patient bed, a wall-mounted fixture for reading and ambient light, and supplemental lighting in the form of recessed downlights. Additionally, LED night light fixtures will be provided in the patient rooms for low level lighting during the evening hours. Work areas such as nurse's stations and utility rooms will be provided with task lighting in the form of undercounter fixtures. Fluorescent lamp sources will be utilized wherever possible due to their energy efficiency, specifically T-8 lamps with electronic ballasts. In order to save

energy cost and in keeping with Suburban's pledge to create a sustainable environment, incandescent lamps will be not be used and, fluorescent "u-tube" lamps will not be used. Ballasts will be low harmonic distortion (<10% THD) type. Where dimming is required, Lutron Hi-Lume fluorescent dimming ballasts shall be utilized. Areas such as offices, utility rooms, and staff work areas will be provided with bi-level switching to reduce illuminating levels, in accordance with the International Energy Conservation Code (IECC) 2000. Emergency and egress lighting will be designed as an integral part of the building lighting system in accordance with NFPA 101, the Life Safety Code. This will include LED type exit signs and egress lighting fixtures connected to the life safety branch of the emergency power system.

3) **Parking Structure**

The power requirements for the parking structure include lighting, elevators, and ventilation. It is estimated that the parking structure will require a 400A electrical service at 480Y/277V. A separate PEPCO utility feeder will be provided to serve this facility. A 400A distribution panel and associated CT cabinet will be provided to serve the elevators and the lighting loads. Emergency power is required for egress lighting, one elevator, and exhaust fans. Emergency power will be provided from the hospital emergency generator plant. A 100A automatic transfer switch will be provided to serve the Life Safety distribution panel. Approximately one-third of the lighting in the garage will be powered from the emergency generator system during an emergency condition.

IV. Sustainable Design

Internationally, the World Building Congress has defined sustainability as "meeting our needs today without compromising the ability of future generations to meet their own needs." As a leading healthcare provider, the Hospital is committed to creating and maintaining an environment that is more sustainable, taking advantage of existing

infrastructure, enhancing the employee workplace, creating additional green space within the vicinity, and reducing energy and material costs for the life of its facilities.

In this regard, the Hospital has developed a matrix that summarizes the main credits/factors of the Leadership in Energy and Environmental Design (LEED) Green Building Rating System™, and has assigned the likelihood of the Hospital's achieving points for each credit/factor of the LEED rating system, as indicated on the following table. The table will be used by the Hospital as a guideline to assist in Suburban's future design plans and construction implementation. Although the specific factors to be employed are not fully developed, we believe that many of the main credits/factors identified will be successfully achieved.

Credit No.	Description	Possible Points	Achievability for Suburban 2020		
			Likely	Possible	Unlikely
Sustainable Sites					
Prereq 1	Construction Activity Pollution Prevention	Required			
Credit 1	Site Selection	1 1	1		
Credit 2	Development Density & Community Connectivity	1 1	1		
Credit 3	Brownfield Redevelopment	1 1			1
Credit 4.1	Alternative Transportation, Public Transportation Access	1 1	1		
Credit 4.2	Alternative Transportation, Bicycle Storage & Changing Rooms	1 1	1		
Credit 4.3	Alternative Transportation, Low Emitting & Fuel Efficient Vehicles	1 1			1
Credit 4.4	Alternative Transportation, Parking Capacity	1 1	1		
Credit 5.1	Site Development, Protect or Restore Habitat	1 1			1
Credit 5.2	Site Development, Maximize Open Space	1			1
Credit 6.1	Stormwater Design, Quantity Control	1	1		
Credit 6.2	Stormwater Design, Quality Control	1	1		
Credit 7.1	Heat Island Effect, Non-Roof	1	1		
Credit 7.2	Heat Island Effect, Roof	1		1	
Credit 8	Light Pollution Reduction	1	1		
TOTALS - Sustainable Sites		14	9	1	4
Water Efficiency					
Credit 1.1	Water Efficient Landscaping, Reduce by 50%	1	1		
Credit 1.2	Water Efficient Landscaping, No Potable Use or No Irrigation	1		1	
Credit 2	Innovative Wastewater Technologies	1			1
Credit 3.1	Water Use Reduction, 20% Reduction	1			1
Credit 3.2	Water Use Reduction, 30% Reduction	1			1
TOTALS - Water Efficiency		5	1	1	3
Energy & Atmosphere					
Prereq 1	Fundamental Commissioning of the Building Energy Systems	Required			
Prereq 2	Minimum Energy Performance	Required			
Prereq 3	Fundamental Refrigerant Management	Required			
Credit 1	Optimize Energy Performance	1 - 10		1	9
Credit 2	On-Site Renewable Energy	1 - 3		1	2
Credit 3	Enhanced Commissioning	1	1		
Credit 4	Enhanced Refrigerant Management	1		1	
Credit 5	Measurement & Verification	1	1		
Credit 6	Green Power	1			1
TOTALS - Energy & Atmosphere		6 - 17	2	3	12
Materials & Resources					
Prereq 1	Storage & Collection of Recyclables	Required			
Credit 1.1	Building Reuse, Maintain 75% of Existing Walls, Floors & Roof	1			1
Credit 1.2	Building Reuse, Maintain 95% of Existing Walls, Floors & Roof	1			1
Credit 1.3	Building Reuse, Maintain 50% of Interior Non-Structural Elements	1			1
Credit 2.1	Construction Waste Management, Divert 50% from Disposal	1		1	
Credit 2.2	Construction Waste Management, Divert 75% from Disposal	1			1
Credit 3.1	Materials Reuse, 5%	1		1	
Credit 3.2	Materials Reuse, 10%	1		1	
Credit 4.1	Recycled Content, 10% (post-consumer + 1/2 pre-consumer)	1	1		
Credit 4.2	Recycled Content, 20% (post-consumer + 1/2 pre-consumer)	1		1	
Credit 5.1	Regional Materials, 10% Extracted, Processed & Manufactured Regionally	1	1		
Credit 5.2	Regional Materials, 20% Extracted, Processed & Manufactured Regionally	1		1	
Credit 6	Rapidly Renewable Materials	1		1	
Credit 7	Certified Wood	1	1		
TOTALS - Materials & Resources		13	3	6	4
Indoor Environmental Quality					
Prereq 1	Minimum IAQ Performance	Required			
Prereq 2	Environmental Tobacco Smoke (ETS) Control	Required			
Credit 1	Outdoor Air Delivery Monitoring	1		1	
Credit 2	Increased Ventilation	1	1		
Credit 3.1	Construction IAQ Management Plan, During Construction	1	1		
Credit 3.2	Construction IAQ Management Plan, Before Occupancy	1	1		
Credit 4.1	Low-Emitting Materials, Adhesives & Sealants	1	1		
Credit 4.2	Low-Emitting Materials, Paints & Coatings	1	1		
Credit 4.3	Low-Emitting Materials, Carpet Systems	1	1		
Credit 4.4	Low-Emitting Materials, Composite Wood & Agrifiber Products	1	1		
Credit 5	Indoor Chemical & Pollutant Source Control	1	1		
Credit 6.1	Controllability of Systems, Lighting	1	1		
Credit 6.2	Controllability of Systems, Thermal Comfort	1	1		
Credit 7.1	Thermal Comfort, Design 1	1	1		
Credit 7.2	Thermal Comfort, Verification	1	1		
Credit 8.1	Daylight & Views, Daylight 75% of Spaces	1			1
Credit 8.2	Daylight & Views, Views for 90% of Spaces	1			1
TOTALS - Indoor Environmental Quality		15	12	1	2
Innovation & Design Process					
Credit 1.1	Innovation in Design	1		1	
Credit 1.2	Innovation in Design	1		1	
Credit 1.3	Innovation in Design	1		1	
Credit 1.4	Innovation in Design	1		1	
Credit 2	LEED Accredited Professional	1	1		
TOTALS - Innovation & Design Process		5	1	4	0
Summary					
Sustainable Sites		14	9	1	4
Water Efficiency		5	1	1	3
Energy & Atmosphere		6 - 17	2	3	12
Materials & Resources		13	3	6	4
Indoor Environmental Quality		15	12	1	2
Innovation & Design Process		5	1	4	0
Grand Totals		58 - 69	28	16	25

V. Conclusion

This Report has outlined the specific development proposals of the Hospital necessary to satisfy its functional space requirements for the delivery of high-quality medical services to meet the health care needs of the community it serves. To remain viable, the Hospital must address these needs. The Modification (described in detail above) has been designed and planned to strike a balance between respect for the surrounding community and the continued effective operation of the Hospital. By locating the structures as proposed and implementing the principles of superior campus design, we believe the proposed development strikes the correct balance and fully satisfies the requirements for approval of the Modification.

In summary, the Hospital's proposed plan has been developed to (1) provide long-range land-use predictability, (2) allow the Hospital to modernize its facilities and meet current healthcare standards in order to maintain and provide responsive, high-quality health care to the community, (3) allow for the continued operation of the Hospital during construction and for a phased approach to construction, (4) provide compatibility with the existing surroundings, (5) limit the impact of Hospital traffic to the Hospital Campus, (6) improve access / circulation for people in vehicles, as well as pedestrians, (7) provide adequate parking, (8) improve helipad condition, thus enhancing safety, (9) provide flexibility to accommodate future changes, (10) improve functional interrelationships to enhance operations of the Hospital, (11) enhance the Hospital's relationship with NIH, (12) provide office and support space to support physician practices, and (13) enhance security on campus.

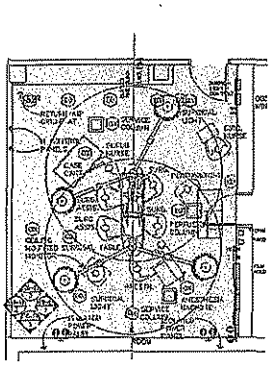
As designed and proposed, the Modification satisfies the area and density requirements of the Zoning Ordinance, is in harmony with the character of the neighborhood

considering design, scale, bulk and intensity, is not detrimental to the use or peaceful enjoyment of surrounding properties, causes no objectionable noise, or physical activity, will not adversely affect residents, visitors or workers in the area and does not adversely affect the present character or future development of the surrounding residential community.

Appendices

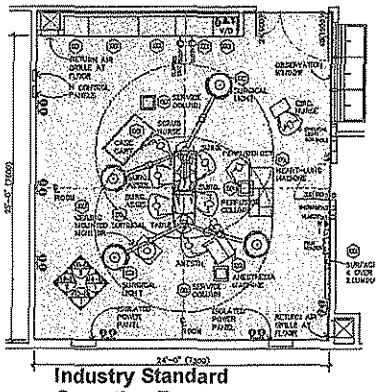
APPENDIX 6-1: COMPARISON BETWEEN SUBURBAN HOSPITAL FACILITIES AND INDUSTRY STANDARDS:

Surgery Department



Suburban Hospital
Existing Operating Room

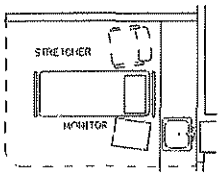
380 SF to 400 SF per Room



Industry Standard
Operating Room

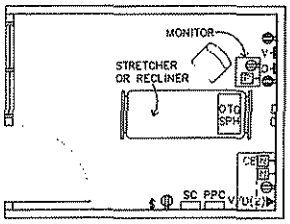
600 SF to 700 SF per Room

Emergency Department



Suburban Hospital
Emergency Exam Room

85 –90 SF per Bed



Industry Standard
Emergency Exam Room

150 – 160 SF per Bed