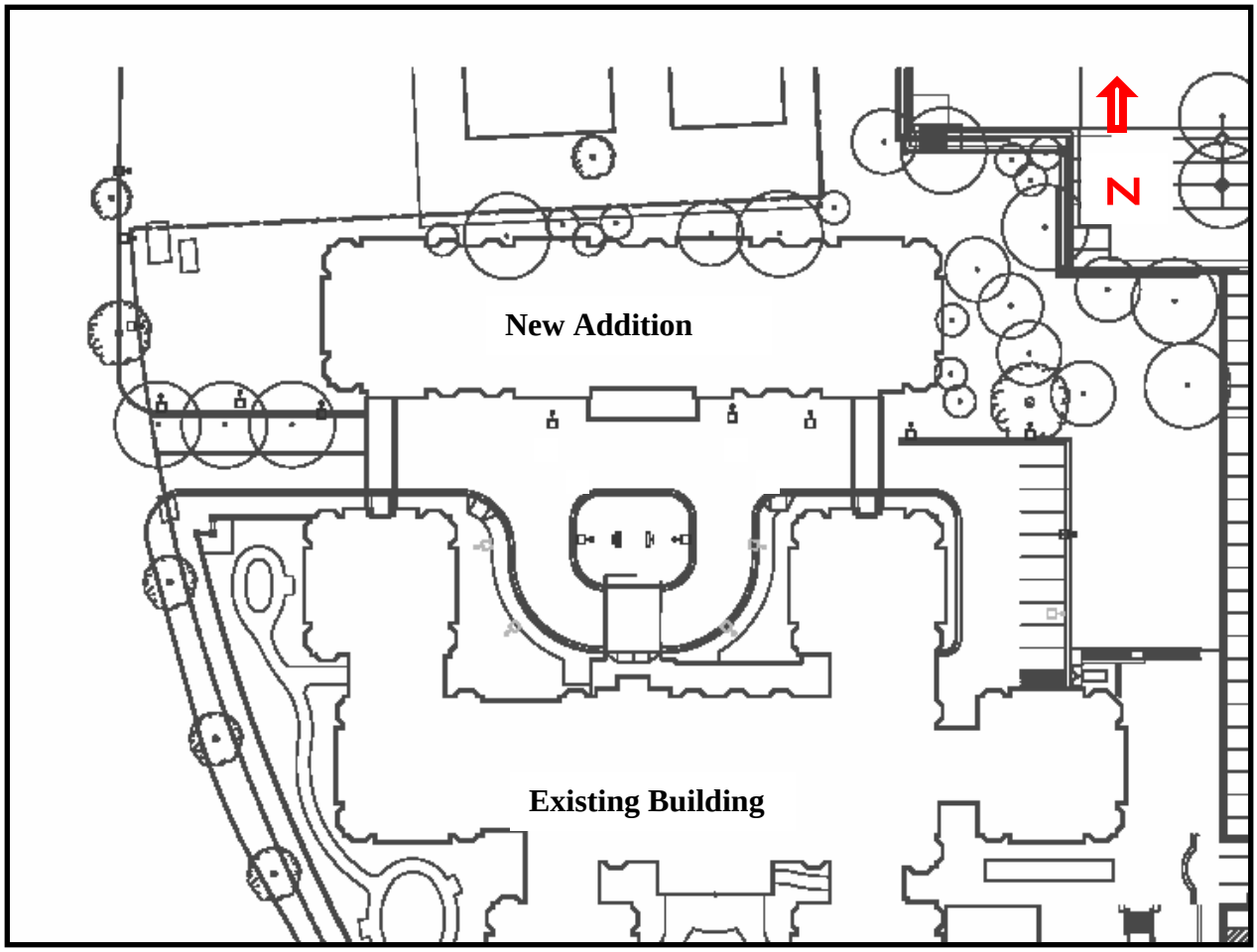
INTRODUCTION AND BACKGROUND

This project looks at Sibley Memorial Hospital's Grand Oaks Assisted Living Facility. The existing building finished construction and began to be operational in the summer of 2000. The existing building was used for the Lighting Depth Study which had a variety of different spaces for which a lighting design program could be developed, these spaces include: The Living Room/Library, The new Dining Room Addition, The Lobby, and the Building Exterior. In the summer of 2006 the facility will be adding a 60,000 square foot addition which will provide additional residential suites and a parking garage on the ground floor. This building addition was studied, from which evolved the Electrical Depth, Mechanical Feasibility Study, and Cost Analysis of Geothermal Heat Pumps.

GENERAL BUILDING OVERVIEW

- **Building Name:** Sibley Memorial Hospital, Grand Oaks Assisted Living Facility Addition.
- **Location and Site:** 5255 Loughboro Road, NW, Washington, DC 20016
- **Building Occupancy Name:** Sibley Memorial Hospital
- **Occupancy or function types:** Assisted Living Residence
- **Size:** New Construction Floor Area – 60,881 SF
  Renovated Existing Floor Area - 6,883 SF
- **Number of stories above grade/total levels:** 4 stories
- **Primary project team:**
  - **Owner:** Sibley Memorial Hospital
    website: www.sibley.org
  - **General Contractor:** Hitt Construction
  - **Architects:** Wilmot/Sanz Architecture/Planning
    website: www.welmot.com
  - **Civil Engineers:** Cervantes and Associates, P.C.
    website: www.vaeng.com/consultants/cervantes--associates/
  - **Food Service:** Culinary Advisors – Food Service Faculty Designers and Consultant, LLC
    website: www.culinaryadvisors.com
  - **M.E.P. Engineers -** Leach Wallace Associates, Inc.
    website: www.leachwallace.com
  - **Structural Engineers –** Smislovia Kehnemui and Associates PA(SK+A)
    website: www.skaengineers.com

- **Dates of Construction (Start-Finish):** 4/18/05-4/14/06 – proposed,
- **Actual Cost Information:** 17 million in contractor cost, not including finishing costs
- **Project Delivery method:** Design-Bid-Build



ARCHITECTURE

Grand Oaks, part of Sibley Memorial Hospital, is an affluent assisted living residence located at the corner of MacArthur Boulevard and Loughboro Road, in Washington D.C. This upper scale living community strives to combine comfortable surroundings, personalized assistance, 24-hour support, and a full range of services and activities. The current facility features 104 apartments, studios, and one-and-two bedroom units, boasting nine-foot ceilings with spacious and bright layouts. The building features sitting rooms with fireplaces; terraces and gardens with European-inspired appointments and furniture provide the finishing touches. Amenities include a comfortable dining room, with an executive chef, clubroom, spa, beauty and barber shop, greenhouse and chapel.[1] The Georgian Style architecture combine the different textures of brick and stucco that provide a classy and elegant look throughout the entire building. Upon arriving to the main entrance, one is greeted with beautiful landscaping and the covered Porte Cochere. The new addition will extend off the two pods, which are at the east and west of the existing building. To maintain traffic flow; the building will connect at floors two through four of the existing building, thus allowing vehicular movement throughout the site. This new addition will sit adjacent to the existing facility on what is currently a parking lot. So as not to loose valuable parking spaces, the new building will maintain a parking area in the first floor level. The exterior façade will be like that of the existing, and floors 2-4 will provide additional tenant space, as well as a day/activity room.

1. www.sibley.org/services/s_grandoaks

MAJOR NATIONAL MODEL CODES

(1) Building: The International Building Code, 2000 and D.C. Supplement 2003
(2) Electrical: NFPA National Electric Code, 1996 and D.C. Supplement 2003
(3) Mechanical: International Mechanical Code, 2000 and D.C. Supplement 2003
(4) Plumbing: International Fire Prevention Code, 2000 and D.C. Supplement 2003
(5) Fire Prevention: International Fire Prevention Code, 2000 and D.C. Supplement 2003

BUILDING ENVELOPE

The Grand Oaks facility is a brick and stucco building with bow windows, Doric columns, and gabled roofing, all of which complement each other in both space and proportion to produce the Georgian Style appearance. The exterior walls consist of three arrangements: one being; face brick, 1-1/2 gypsum sheathing, and 6" metal framing studs, the other; face brick and CMU's, and last; face brick and poured in place concrete. Wall type depends on the place, load barring need, and above/below grade conditions. The structure of the building is comprised of wide flange columns and grade beams. The roofing system has both sloping gables and a hipped portion in the cent that holds the HVAC equipment. The main penthouse and floor framing plan has 3-1/2" lightweight concrete on 2" metal deck. The roof construction at the sloped areas consists of 1-1/2" x 22 gauge galvanized metal roof deck, wide rib type. The sloped area uses wide flange steel beams ranging in size from W12X15 – W18X40. The girders supporting these sloped areas are W21X50.

CONSTRUCTION

The Grand Oaks facility was designed under a design-bid-build contract. Construction was planned and scheduled to take 52 weeks. The tentative dates of construction were 4/18/05-4/14/06. I visited the site in August 2005, and ground had yet to be broken. The most recent information that I have on this building is that that it is in the submittal process.

ELECTRICAL

The normal power is provided to the existing Assisted Living Facility from a PEPCO owned network transformer vault. The electrical service terminates in a 2000 amp switchboard protected by a fused bolted pressure switch located in the basement of the Assisted Living Facility. The existing Facility receives heating and chilled water service from Sibley's Central Energy Plant. A main distribution panel rated at 480Y/277 volts, 3 phase, 800A, is extended from the existing Switchboard. Mechanical equipment is served directly from the Main Distribution Panel Board. Lighting and receptacles are served from dry type transformers and 208Y/120 panelboards. Transformers are located at the North East and North West Wings of the addition and feed the panelboards from their respective locations. Emergency power is generated with an on site 300KW diesel-fired emergency generator. This generator provides emergency power to the elevators, egress lighting, and a limited amount of refrigeration in the kitchen.

-Information obtained from bid proposal provided by Leach Wallace Associates.

LIGHTING

The site lighting for Grand Oaks is minimal and served via pole mounted lighting fixtures. The fixtures are served from the existing electrical equipment in the main building and operate at 277V. All other lighting is served via the 208Y/120 panel boards, and is predominately fluorescent fixtures. The parking garage makes use of metal halide downlights, which serve more of a utilitarian function rather than aesthetic one. The 3-story bridges that connect the addition to the main building make use of daylighting via large window on both sides. Both compact fluorescent downlights and wall sconces provide electric lighting to the bridge corridors. The main corridors are also lit with wall sconces and compact fluorescent downlights. Decorative cove lighting is employed at the ends of the corridors and at the entrance to the day/activity room. The day/activity room makes use of downlights as does the renovated dining room. The dinning room also has decorative cove lighting and linear wall washers.

MECHANICAL

The main air distribution of the Grand Oaks addition is achieved via four pipe fan coil units. All units have forward-curved 3-speed centrifugal fans sized at medium speed to minimize fan noise within the space. The FCU in living areas are exposed floor-mounted types with stack-style vertical cabinets. Air is 100% re-circulated. FCU are of the two-coil, four pipe style. Each unit is suitable for chilled water and heating hot water service. The ventilation requirement is provided by either wall or ceiling mounted supply air registers connected to a ducted 100% outside air ventilation distribution system. Exhausted air is removed through ceiling mounted registers located in toilet rooms. A centralized energy recovery air-handling unit serves both the supply and return air to increase the efficiency of the system. Chilled water is provided via an air-cooled roof-mounted chiller. The chiller is a hermetic helical rotary machine, featuring multiple air-cooled condenser fans, modulating compressor unloading, and independent refrigerant circuits. Hot watered is supplied via two instantaneous steam-fired domestic hot water heaters that receive steam from Sibley's Boiler Plant.
-Information obtained from bid proposal provided by Leach Wallace Associates.

STRUCTURAL

The foundation is typical slab on grade, 5" thick, placed on a vapor barrier, over 4 inches of washed gravel reinforced with 6x6 W2.0x2.0 welded wire mesh. The columns serving this area are placed on caisson pedestals and are predominately wide flanged, W14x68. Grade Beams support the upper floors and are of the 48x52 dimension. Floors 2-4 are comprised of reinforced lightweight concrete on metal decking. Grade beams range in size from W12x72-W55x42, while supporting columns range in size from W10x33-W10x60. Typical spans between columns are 26'6"-30' while typical beam spans are 8-1/2" on center. Sloped roof structure is comprised of W18x40 and W12x16, which hold the galvanized metal roof deck.

PLUMBING

The plumbing system provides domestic cold and hot water, with hot water re-circulation, soil, waste and vent, air conditioning condensate drainage, as well as natural gas. Domestic water service is routed through a pipe chase to a location above the Fourth Floor where a water softener is provided. Cold water is then distributed to other levels with in a series of risers. Domestic hot water is routed form the water heaters, located in the penthouse, down through toilet room chases, and returned to the heaters via inline recirculation pumps.
-Information obtained from bid proposal provided by Leach Wallace Associates.

FIRE PROTECTION

The water for fire protection is obtained from the Domestic Water System. The main fire riser branches into a dry-pipe sprinkler system serving the parking level, and a wet-pipe sprinkler system serving the occupied floors and penthouse spaces. The system is a single zone comprising the entire first level. The sprinkler zone assemblies are contained in the stairwell on each floor and consist of an outside stem and yoke gate valve with tamper switch, check valve and flow switch. All sprinklers are of the quick response type, with recessed heads in all occupied spaces with ceilings.
-Information obtained from bid proposal provided by Leach Wallace Associates.

TRANSPORTATION

Two elevator banks are located in the NW and NE ends of the Grand Oaks addition. Each car is piston driven and operated with 40hp motors that are connected to the emergency branch circuit serving their respective areas.