

CORLEY REDFOOT ZACK^{INC.}

ARCHITECTS • ENGINEERS • PLANNERS

October 25, 2007

Chapel Hill Public Library Expansion CRZ #0619

Response to Planning Board Questions Regarding Proposed Parking Spaces and LEED Certification for the Chapel Hill Public Library Expansion Project:

At its October 16, 2007 meeting the Planning Board reviewed the proposed expansion plans for the Chapel Hill Public Library. At that meeting the Board requested additional information about two project design issues. Specifically, it was requested that additional information be provided about how the number of proposed parking spaces was determined. The Board also requested more detailed information about how the project is proposed to meet LEED silver certification.

Determination of Parking Space Need:

BACKGROUND

The design of all aspects of the Library expansion project has been a collaborative effort between the designers, Library staff and members of the Library Building Committee. The Library Building Committee includes Town Council members, neighbors and representatives of Town and Library Boards and Commissions. In regards to determining parking space needs, members of the Library Building Committee provided diverse input as to what should be included as part of the expansion project. Based on what was described by several Committee members and Library staff as an insufficient existing parking space to function ratio, some members supported a significantly greater increase in parking than is currently proposed. Alternatively, other Committee members either wanting to minimize impact on Pritchard Park or otherwise support the Town's environmental initiatives recommended a limited parking expansion more in line with what is currently proposed. Ultimately, we were directed to develop a parking expansion plan that we believed would be sufficient to meet the needs of the proposed project while minimizing additional impervious surface and incursion into the existing prime natural areas of Pritchard Park. Additionally we were asked to consider the Town's comprehensive Transit system in evaluating long range parking needs and to strive to establish a level of parking availability that is consistent with the project's intended goal of achieving LEED silver certification and the Town's overall objective of reducing carbon emissions.

In order to evaluate the Committee's diverse input we hired Martin/Alexiou/Bryson, PLLC to provide a preliminary parking study early in the Conceptual Design phase of the project. This study, conducted in January 2007, is included as attachment #1. Several possible parking lot expansion options were then discussed with the Committee before the existing plan was developed and included as part of the plan ultimately endorsed by the Committee and then presented as a Concept Plan to the Community Design Commission and the Town Council in June 2007.

DISCUSSION

We believe the 242 parking spaces proposed reflect a balanced response to the information we had available and the varying perspectives we considered. We note that the proposed number of parking spaces is significantly less than the 296 spaces that would have been recommended based exclusively on the parking study's recommended ratio of 1 space per 230 square feet of building area. We believe our proposed plan is consistent with the Town's overall objectives of minimizing parking numbers and that it carefully reflects the interests of Committee members, and others, in protecting Pritchard Park.

In considering parking requirements at the Library we believe there are several issues that need to be considered beyond the parking space per square foot of building approach considered in the preliminary parking study. The plans as currently proposed include a significant four room public meeting complex, independent from the Library and available for unrelated Community functions that will likely generate concentrated peaks of parking space need. The proposed park improvements, including a future playground, belvedere and art garden will likely also attract users independent from the Library that may increase parking needs. Lastly, we note that the Library is a stand-alone facility that unlike most other Town buildings does not have the opportunity to readily take advantage of off-site parking options when parking need levels are highest. We believe that a consideration of these issues further supports our proposed parking plan.

LEED Certification:

BACKGROUND

As a component of the Special Use Permit submittal, Mr. David Browne, a LEED-accredited designer for our firm, prepared a Preliminary Energy Management Plan (Attachment #2). It appears that this document was inadvertently omitted from the materials distributed to the Planning Board prior to the October 16, 2007 meeting. This document outlines the approaches we intend to follow to meet LEED silver certification for the project, including the proposed addition and the renovated existing building. At the meeting on October 16, 2007 the Board requested that more detailed information be provided about the credits we intend to pursue to meet our proposed LEED certification.



DISCUSSION

Attachment #3 is the draft checklist we intend to use to establish credits needed for LEED certification of the Library expansion project. The emphasis at this point in the design process is to meet LEED silver certification utilizing credits only for design and construction elements of the project, allowing additional credits to be earned for operational elements (such as the purchase of green power) if elected by the project owner. Although we anticipate meeting all of the objectives noted on the draft checklist, it is possible some substitution credits will need to be considered as we further refine the design and the construction documents.

Submitted by,

Kenneth E. Redfoot, AIA

KER:esw/0619-par
Attachments



CORLEY REDFOOT ZACK INC.

ATTACHMENT #1

Martin/Alexiou/Bryson, PLLC
Transportation Planning
Traffic Engineering



January 29, 2007

Mike Hammersley, P.E.
Corley Redfoot Zack, Inc.
PO Box 2368
Chapel Hill, NC 27515

RE: Parking Study for Chapel Hill Library Expansion
Chapel Hill, North Carolina

Dear Mike:

Martin/Alexiou/Bryson, PLLC (M/A/B) undertook a parking occupancy study for the Chapel Hill Library Expansion. The library is located off N. Estes Drive in Chapel Hill, NC. The Town of Chapel Hill intends to expand the library from approximately 28,000 sf to 75,000 sf. The study's primary objective was to determine the number of parking spaces needed to adequately serve the library while meeting the Town's parking requirements.

The Town is currently considering an update to its parking requirements based on the Town's 2004 *Proposed Minimum and Maximum Parking Requirements* study. The existing land development regulations establish a minimum parking requirement of 1 space per 350 sf for public use facilities. Below are the proposed minimum and maximum parking rates and parking requirements for a 75,000 sf library.

Public Use Facility (i.e. 75,000 sf library)

- | | | |
|-----------------------|--------------------|------------|
| • Min Parking Spaces: | 1 space per 350 sf | 214 spaces |
| • Max Parking Spaces: | 1 space per 225 sf | 333 spaces |

Existing Conditions

Staff conducted a field review of the library and its parking lot. The library's parking is fully contained on-site. There are three parking areas totaling 122 spaces: main parking lot, handicap spaces near the front door and an employee lot/loading area. Occasionally vehicles were observed parked by the library's front door at the curb. However the far majority of vehicles park in designated spaces. Some patrons may bike or walk to the library as one of the Town's trails transects the site.

Based on a conversation with library staff, the busiest days of the week are Saturday and Sunday. Parking occupancy was observed once an hour throughout the weekend January 20 – 21, 2007 during the library's core hours of operation. Table 1 summarizes the percent of parking spaces occupied throughout the weekend. Three additional hourly occupancy counts were taken on two weekdays, January 8th and 9th and are also included in table.

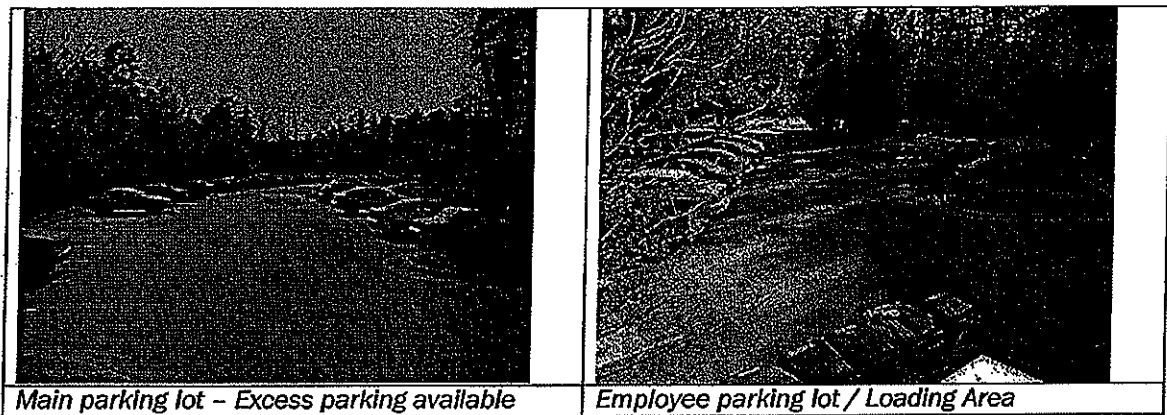


Table 1 Parking Occupancy

Time	Demand	Occupancy
Mon 1/8/07		
2:00	52	43%
5:00	83	68%
Tues 1/9/07		
5:00	102	84%
Sat 1/20/07		
10:00	72	59%
11:00	91	75%
12:00	109	89%
1:00	94	77%
2:00	92	75%
3:00	116	95%
4:00	98	80%
5:00	70	57%
Sun 1/21/07		
2:00	105	86%
3:00	113	93%
4:00	108	89%
5:00	87	71%
6:00	37	30%

The peak parking demand, 116 vehicles, was observed on Saturday at 3:00 pm. The lot was 95% full, which is optimum. A lot which is 100% full may be ideal from an efficiency perspective, but from a parkers vantage point it can be frustrating searching for the lone remaining parking space.

A 90% - 95% effective parking capacity is a standard design goal for parking facilities. The effective parking capacity is the number of available parking spaces minus a buffer to facilitate residents searching for parking during peak periods. The buffer also provides a small excess of parking to compensate for mis-parked vehicles intruding on an adjacent parking space, construction, materials storage, etc. A 95% effective parking capacity was utilized in this analysis based on the Town's inclination to not over park and encourage the use of alternative modes. A 95% effective parking capacity provides adequate parking to serve residents who chose to drive.

Parking Demand	116 spaces
95% Effective Capacity	$\frac{116}{0.95} = 122 \text{ spaces}$
Proposed Parking Rate	122 spaces per 28,000 sf = 1 space per 230 sf

Parking Projections

Based on the background information you provided, the library will maintain a similar mix of programs and uses. Maintaining a 95% effective supply, a recommended parking supply for a 75,000 sf library can be calculated.

$$\text{Recommended parking supply} = 75,000\text{sf} * \frac{1\text{space}}{230\text{sf}} = 327 \text{ spaces}$$

Peer Comparisons

A summary of other local municipalities' library parking rates is provided in Table 2. Some municipalities specifically identify rates for libraries while others provide parking rates for public use facilities, similar to the Town of Chapel Hill. Two municipalities reviewed do not based the parking requirements on building area, but the number of seats or maximum occupancy.

Table 2 Peer Comparison - Minimum Parking Requirements

Municipality	Minimum Parking Requirement
Chapel Hill - Observed Library Parking Rate	1 space per 230 sf
Chapel Hill - Public Use Facility (Existing)	1 space per 350 sf
Chapel Hill - Public Use Facility (Proposed)	1 space per 350 sf (Min); 1 per 225 sf (Max)
Cary - Library	1 space per 200 sf
Durham - Community Service	1 space per 500 sf
Greensboro - Libraries, Museums, Art Galleries	1 space per 400 sf for public use
Carrboro - Libraries, Museums, Art Galleries	1 space per 300 sf
Orange County	1 space per 4 seats
Raleigh	1 space per 5 seats or 1 space per max occupancy whichever is greater
ITE Parking Generation 3 rd Edition - Average Peak Period Parking Demand*	2.61 vehicles per 1000 sf OR 1 parked vehicle per 380 sf

* The average peak period parking demand is not a proposed parking rate, but provides a method to calculate parking demand.

Both Chapel Hill's existing and proposed parking rates fall within Table 2's range of observed parking rates. The recommended parking rate 1 space per 230 sf appears reasonable based on the peer comparison.

Conclusions

To accommodate the heavier weekend parking demand, approximately 327 parking spaces are needed to serve both residents and employees. The 327 parking spaces provides a small buffer to facilitate parkers searching for a space, mis-parked vehicles occupying two spaces, construction and materials storage. The recommended 327 parking spaces is based on a 1 space per 230 sf parking rate which exceeds the Town's existing parking requirement of 214 parking spaces and falls within the proposed minimum 214 space to maximum 333 space range, outlined in the *Proposed Minimum and Maximum Parking Requirements* study.

If you have any questions regarding this memorandum please contact me at (919) 829-0328. You can also reach me via email at luanadeans@mabtrans.com.

Sincerely yours,
Martin/Alexiou/Bryson, PLLC (M/A/B)



Luana Deans, P.E.
Senior Associate

PRELIMINARY ENERGY MANAGEMENT PLAN

For the

CHAPEL HILL PUBLIC LIBRARY

September 26, 2007

GOAL: To provide a structure to meet the Library's programmatic needs that will also maximize the potential for energy conservation by:

- (1) reducing the demand for artificial heating, cooling, ventilation, and lighting through building design and orientation;
- (2) making use of sustainable energy; and
- (3) to the extent that artificial heating, cooling and ventilation are required, designing those systems for optimal efficiency and a capacity for ongoing monitoring.

OBJECTIVES: In keeping with Town of Chapel Hill policy, the Library is being designed to achieve a LEED Silver rating. Among the LEED "credits" the design is targeting are the following, which will enhance energy conservation and air quality:

- (1) Optimization of energy performance: The project will include a building energy simulation for all new construction demonstrating a minimum 20% improvement over the baseline building performance rating per ASHRAE/IESNA 90.1-2004.
- (2) Enhanced commissioning: The Owner has engaged an independent Commissioning Agent who will not only commission the building prior to occupancy, but will also monitor the design development process to support the incorporation of energy efficiency features and follow up post-occupancy to assure that building systems and design elements are performing as intended.
- (3) Enhanced refrigerant management: The design will reduce ozone depletion and support early compliance with the Montreal Protocol while minimizing direct contributions to global warming.
- (4) Measurement & verification: The design will provide for ongoing accountability of building energy consumption over time.
- (5) Green Power: The Owner is aware that LEED credit can be achieved through entering into a contract to purchase power through the NC GreenPower program but is not at this time relying on this LEED credit to achieve a Silver rating. Purchasing power through NC GreenPower will be considered as a component of the buildings on-going Energy Management program, but will not affect project design or construction.
- (6) Outdoor air delivery monitoring: The design will provide for ventilation system monitoring to help sustain occupant comfort and wellbeing.

ELEMENTS: Design features that will enhance energy conversation include, but are not limited to, the following:

- (1) Extensive use of day lighting, with controls to regulate the output of light fixtures to optimize this;
- (2) Use of roof overhangs, shade screens, and glazing that will allow light to enter the building while minimizing solar heat gain;
- (3) High efficiency HVAC equipment, DX units and boilers;
- (4) A facility energy management system that will allow systems operation to be monitored and optimized for energy efficiency;
- (5) Solar domestic water heating;
- (6) A light-colored roof to minimize heat gain; and
- (7) Mechanical ventilation systems designed to meet or exceed the minimum requirements of ASHRAE 62.1-2004, "Ventilation for Acceptable Indoor Air Quality."
- (8) Outdoor airflow and CO₂ monitors;

SUMMARY: The design elements listed above are direct responses to the objectives.

- (1) Daylighting with light controls, premium efficiency mechanical systems, a light-colored roof and glazing orientation and shading devices will all contribute to reducing the building's energy cost.
- (2) The facility energy management system and mechanical ventilation system monitors will contribute to efficient operation and accountability of building energy consumption.
- (3) Other elements of the design in pursuit of the agreed upon LEED Silver rating will have less direct, but still measurable effects on the project's energy consumption and carbon footprint. Among these are:
 - (A) Use of regionally manufactured materials to minimize transportation; and
 - (B) Use of recycled and rapidly renewable materials to further sustainability.