SKANSKA

Associated Schools of Construction

Student Competition - Reno, Nevada
February 13 -16, 2008

National Problem Statement
Leadership in Energy and Environmental Design (LEED)

Introduction

Skanska USA Building has strived to create projects all over the world that have minimal, if any, impacts on the environment throughout their construction and lifecycle. Utilizing the programs set forth by the U.S. Green Building Council, along with forward-thinking project teams assembled over the years, we have sought to move farther down the path of "green building" using any and all methods available. With your help, our goal over the next few days will be more than simply the creation of many outstanding proposals and presentations. Our hope is that you will move forward with a greater understanding and appreciation of the green building methods that we, as individuals in the construction industry, can employ in our day-to-day operations. More than that, we hope that you will look to implement these ideas into your future careers in the construction industry.

Schedule

The LEED problem statement will be presented to the participating schools as follows:

- Wednesday, January 24, 2008
    - Pre-qualification submittal shall be delivered to:
      Skanska USA Building Inc.
      221 Yale Avenue North, Suite 400
      Seattle, WA 98109
      Attn: Daniel Haas

- Thursday, February 14, 2008
    - 6:00 -6:45 a.m. - Teams will attend a LEED Charrette for the selected project.
    - 6:45 - 7:00 a.m. - Distribution of Problem Instruction and Materials.
    - 7:00 a.m. - 8:59 p.m. - Preparation of written responses to problems.
    - 9:00 p.m. - Written responses to problems and documentation due.

- Friday, February 15, 2008
    - 6:30 a.m. - Turn in all oral presentation materials to specified room. Teams advised of presentation order.
    - 7:30 a.m. – 3:30 p.m. - Oral presentations. 5 minutes setup, 15 minute presentation, 5 minute questions and answer period and 5 minute breakdown period.
    - 5:00 p.m. - Debriefing of project as-built.

- Saturday, February 16, 2008
    - 12:00 p.m. – 2:30 p.m. - Awards Ceremony

Scoring Overview

The judging panel will be made up of six or more members from the property developer, project architect and general contractor. Point scales will be assigned to elements of the written and oral presentations as follows:

	Available Points
• Prequalification: Your firm's history, personnel, experience and commitments to sustainable design and green building, presented as a pre-conference submittal.	5
• Problem Statement 1 – Evaluate the LEED NC 2.2 and LEED CS 2.0 rating systems to determine which rating system is most appropriate for the project	15
• Problem Statement 2 – Calculate and determine eligibility for SS Credit 2, Development Density and Community Connectivity.	10
• Problem Statement 3 – Calculate and determine eligibility for SS Credits 4.1 and 4.2, Alternative Transportation	10
• Problem Statement 4 – SS Credit 7.1, Determine which option is most viable to pursue and also provide the maximum allowable square footage if this point is to be obtained	5
• Problem Statement 5 – WE Credit 1.2, Calculate storage requirements for non-potable water demands for the project if rainwater harvesting is used	10
• Problem Statement 6 – EA Credit 1, Develop and identify possible strategies for demand reduction that can be incorporated into the design	15
• Problem Statement 7 – EQ Credit 3.1, Evaluate the required level of filtration and analyze alternative methods of filtration	5
• Problem Statement 8 – ID Credit 1, List three potential qualifying strategies evident from analysis of the SS points	5
• Oral Evaluation: Oral group presentation and defense to challenge of the work performed in Problem Statement 1 and Problem Statement 6	20
Total Possible Points	**100**

Required Materials for Problem Solution

See pre-qualification statement for requirement.

Submission Guidelines

In keeping with sustainable practices, all proposers will provide an electronic submission with one "hardcopy" submission required for record. Email attachments and/or Compact Disks (CD) are the only acceptable means of submission materials. All electronic submissions must be in the form of a PDF, MS Imaging file, JPG, TIF or other electronic format. PDF is the preferred file format for submission.

In addition to this main requirement, the following proposal formats must be adhered to:

1. 12-point Arial font
2. 1-1/2" border around all documents, left justified
3. All text single spaced
4. Maximum submission of 20 pages, including cover letter, schedules or other documentation necessary to support your submission.
5. If CD submission is utilized, clearly indicating your firm's name, problem statement and submission date.

Internet accessibility is required for your research and submission assistance.

A five (5) point deduction from the overall team score will be assessed for proposals in excess of the 20 page maximum described above.

Problem Statement Overview

This year's problem is based on the Seattle Civic Square, a mixed use complex consisting of 22 floors of office space, 16 floors of residential space and retail space all housed in two towers. In addition to the towers, there are 6 floors of underground parking and an associated surface plaza structure which provide access to metro tunnels. The building is to be constructed with a concrete frame and core with precast concrete and glazed curtainwall exterior skin elements.

This problem involves the identification, analysis, comparison and proposed recommendation for several aspect points or alternates considered for the project; and presentation and defense of the proposed points and recommendations.

The problem you are working on is a real project in the design and construction process. The decisions made at the beginning of a project have the greatest impact and often determine the feasibility and overall success of a project. Your team's review and recommendations to the project team before the start of construction are instrumental in determining the overall success of the project.

General Project Information	
Total Office Tower SF Level 4 to 25	567,600 SF
Total Garage SF Levels P5 to P1	283,220 SF
Core Area SF	78,034 SF
Typical Office Tower Floorplate	25,800 SF
Amenity SF Levels 26 & 27	24,717 SF
Typical Condominium Floorplate	10,815 SF
Total Retail SF Level 1 (Multiple Bldgs)	55,169 SF
Total Retail SF Level 1M (Multiple Bldgs)	28,731 SF
Total Retail SF Level 2 (Multiple Bldgs)	30,403 SF
Total Retail SF Level 3 (Multiple Bldgs)	26,470 SF
Project Site Area	1.31 Ac
Number of Condominiums	160
Rainwater Collection Efficiency	75 %
Owner/Tenant Occupied space	35 %
Occupant Hours (office at peak period)	7 a.m. to 5 p.m.
Transient Occupants (office at peak period)	400
Full Time Equivalent Occupants	2,375
Total Number Parking Spaces	580
Overall Construction Cost	$211,000,000
Non-Regularly Occupied Spaces	114,632 SF

Problem Statement 1

Evaluation of alternate rating systems

15 points possible

Intent:

Evaluate the LEED NC 2.2 and LEED CS 2.0 rating systems to determine which rating system is most appropriate for the project

Required:

The project team is in the process of determining which LEED rating system is most appropriate for the project. Provide an evaluation of the applicability of the LEED NC 2.2 and LEED CS 2.0 rating systems for this project. Identify at least four comparison factors used in your analysis and summarize your findings in a written recommendation to the project team.

Problem Statement 2

Evaluation of eligibility for credit

10 points

Intent:

Calculate and determine eligibility for SS Credit 2, Development Density and Community Connectivity.

Required:

1. Determine the project density radius in accordance with applicable LEED criteria
2. Calculate the development density for the project
3. State whether the project complies with the requirements to achieve the point

Judges Note: *Parcel reference information can be located at http://www5.kingcounty.gov/reports/property*

Problem Statement 3

Evaluation of eligibility for credit

10 points

Intent:

Calculate and determine eligibility for SS Credit 4.1 and 4.2, Alternative Transportation

Required:

The project is located close to mass transit and public transportation. Determine the following:

1. Determine and confirm the number of available transit rides per day available to the project
2. Calculate the required number of secure bicycle storage spaces required based on your answer to Problem Statement 1
3. Determine the number of required changing and shower facilities based on your answer to Problem Statement 1

Problem Statement 4

Evaluation of needed capacity for credit

5 points possible

Intent:

SS Credit 7.1: Determine which option is most viable to pursue and also provide the maximum allowable square footage if this point is to be obtained

Required:

The project team is reviewing the requirements for SS Credit 7.1, Heat Island Effect: Non-roof. Using information provided, calculate:

1. The maximum allowable surface area of hardscape that may be installed while ensuring the point is achieved
2. In a narrative format, compare available options and list factors and requirements that influence your decision and recommendation

Problem Statement 5

Evaluation of needed capacity for credit

10 points possible

Intent:

WE Credit 1.2: Calculate storage requirements for non-potable water demands for the project if rainwater harvesting is used

Required:

The project team would like to use harvested rainwater for non-potable use in flushing toilets in the office area of the project. Determine the following:

1. The required storage capacity of a rainwater harvesting system if a seven-day supply of water is desired for this system (use LEED Guidelines and methodology for calculation, or local plumbing Code)
2. Based on the normal monthly rainfall for Seattle (SeaTac Airport), calculate the total quantity of water available by a rainwater collection system and what percentage of the demand this system represents.
3. If the FTE ratio is revised to 250 sf/person, how does this affect the monthly percentages?
4. Identify at least 3 other credits this system would affect and describe the anticipated impacts.

Problem Statement 6

Identification of Design Strategies

15 points possible

Intent:

EA Credit 1: Develop and identify possible strategies for demand reduction that can be incorporated into the design

Required:

The project Owner is interested in minimizing utility costs for the project by reducing energy consumption. The concept of Demand Reduction has been identified as one of the possible strategies to reduce energy consumption during peak periods. Identify at least five potential strategies to implement Demand Reduction and prepare a written summary of the options for the Owners review.

Problem Statement 7

Determination of required level for credit

5 points possible

Intent:

EQ Credit 3.1: Evaluate the required level of filtration and analyze alternative methods of filtration

Required:

Air quality within the new facility is of the utmost importance to the ownership for the health and benefit of employees, public and user groups associated with the development. To meet the requirement, the mechanical designer has specified dynamic filtering and UV mold control for the HVAC supply systems units.

1. Analyze this proposal from the mechanical designer to determine if dynamic filtering will meet the requirements in order to help the project achieve certification.
2. Based on your analysis, identify minimum requirements for filtration media to achieve this point.

Judges Note: Teams must research this option outside of the LEED documentation provided to you.

Problem Statement 8

Evaluation and presentation of potential strategies

5 points possible

Intent:

ID Credit 1, List at least three qualifying strategies evident from analysis of the SS points

Required:

From the information identified within the previous problem statements, identify and list three Innovation in Design credits the project has earned within the Site Selection series of points. The points may be achieved by either Exemplary Performance or Innovation.

Oral Evaluation:

Oral group presentation

20 Points

Intent: Present summary overview and recommendations for your teams answers to Problem Statements 1 and 6.

Required: Teams will be allowed a five (5) minute set-up period. Teams will be allotted fifteen (15) minutes in which to present their solutions and approach to the problem statements, and their recommendations to the Executive Committee. A five (5) minute question and answer period will follow the presentation. Five (5) minutes will be allowed for breakdown. A computer, an overhead projector and a screen will be provided for presentation to the committee. Any other presentation materials required are to be provided by the team.

Problem Reference Documents and Attachments

1. Exhibit 1 – Concept Drawing Package dated 11.06.07 – 15 pages
2. Exhibit 2 – Building Area Summary undated – 1 page
3. Exhibit 3 – Building Sections and Elevations dated 08.23.07 – 8 pages
4. Exhibit 4 – Geotechnical Report dated 11.24.2004 – 50 pages
5. Concept Design Submission dated December 2007
    a. Exhibit 5a – Sheets 1 through 19
    b. Exhibit 5b – Sheets 20 through 39
    c. Exhibit 5c – Sheets 40 through 59
    d. Exhibit 5d – Sheets 60 through 79
    e. Exhibit 5e – Sheets 80 through 99
    f. Exhibit 5f – Sheets 100 through 119
6. Exhibit 6 – Extract of Seattle Mechanical Code undated – 3 pages