



Envisioning Fully Sustainable Buildings

Using The Natural Step and LEED

Green Building Workshops in China – 2008

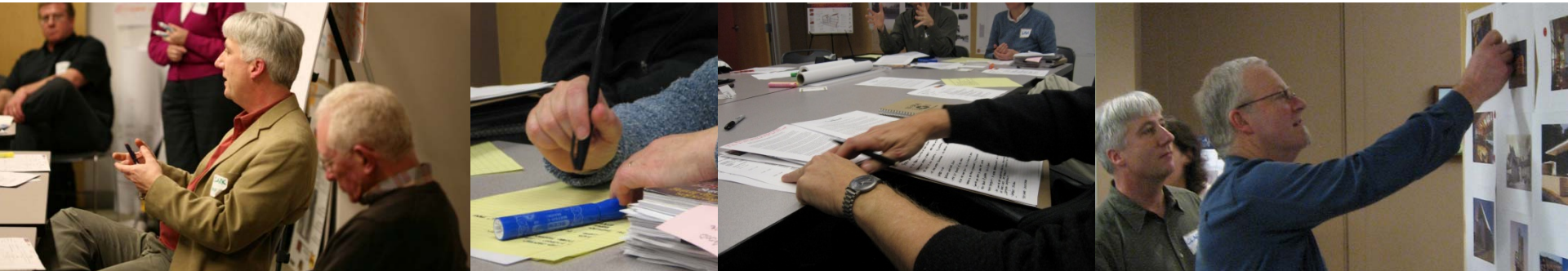
- *Shenzhen*
- *Shanghai*
- *Beijing*

Presentation Team

- Dennis Wilde,
Gerding Edlen Development Company
- Clark Brockman,
SERA Architects, Inc.



Agenda – Day 2



- Overview of the Natural Step
- • Charrette Exercise:
 - Concept presentation
 - Small group breakouts
 - Small group summaries
- Wrap up discussion



The Natural Step and LEED – Design Exercise

Mixed Use Office Building

PROJECT DESCRIPTION

Client: A **Software Development Corporation** seeking to develop their corporate headquarters as a flagship green building.

Site / Location: **Corporate office park** on [Shenzhen, Shanghai, Beijing]'s urban edge. The office park is **served by mass transit** and is **adjacent to a river and a large tract of undeveloped land** which includes some residual, unmaintained wetlands. Within the development, paved parking and sidewalks are typical, **buildable sites all have good daily sun-exposure**, and good tree and vegetation plantings are possible. Available underground utilities: water, sewer, stormwater, natural gas, electricity, telephone, cable.

Program: **4 – 6 stories**, 6,500 square meters (70,000 square feet) – 9,000 square meters (100,000 square feet). Offices and conference spaces predominate, with café retail areas at the ground floor as appropriate. Informal public/private area for congregating is desired. 200 – 300 car parking spaces expected based on current requirements of the office park – this requirement may be appealed.

Operations: Normal hours of operation expected to be **7am – 6pm Mon-Fri**. Card-key access allowed for employees for nights and week-ends. Weekly janitorial, recycling and trash pick-up service may be provided by the office park.



The Natural Step and LEED – Design Exercise

Project Description

Client

- software developer
- corporation
- desire “flagship” green building

Program

- 4 – 6 stories
- 6,500 sq. meters – 9,000 sq. meters
- (70,000 sq. feet – 100,000 sq. feet)
- café/retail areas at ground floor
- 200 – 300 parking spaces

Site

- Urban fringe
- near wetland and undeveloped property
- good sun all year

Expected Hours of Operation

- 7 am – 6 pm M-F



AWARENESS

The four system conditions of The Natural Step.

In order for a society to be sustainable, nature's functions and diversity are not systematically...



1. ...subject to increasing concentrations of substances extracted from the earth's crust;
2. ...subject to increasing concentrations of substances produced by society;



3. ...impoverished by physical displacement, over harvesting, or other forms of ecosystem manipulation;

and in a sustainable society,

4. people are not subject to conditions that systematically undermine their capacity to meet their needs.



AWARENESS

SERA's interpretation of the four system conditions:



TAKE

Can the earth replace what I take?



MAKE

Am I poisoning the earth, air or water?



RESPECT

Do I respect the biodiversity of flora and fauna?



CHOOSE

Are the choices I make fair and equitable?



The Natural Step and LEED – Design Exercise

THE WORKSHEET

INDOOR ENVIRONMENTAL QUALITY

Task #1 Describe Current Situation					Task #2 Visualize Full Alignment		Task #3 Implementation		
Conventional Approach	SC Violations				Sustainable Vision	Strategy	Barriers	Opportunities	LEED Checklist
	1	2	3	4					



The Natural Step and LEED – Design Exercise

Task 1: Analyze Baseline Project for System Condition Violations

INDOOR ENVIRONMENTAL QUALITY

Task #1 Describe Current Situation					Task #2 Visualize Full Alignment		Task #3 Implementation		
Conventional Approach	SC Violations				Sustainable Vision	Strategy	Barriers	Opportunities	LEED Checklist
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Low-VOC adhesives and sealants per LEED standard									

A. Establish baseline design criteria

The Natural Step and LEED – Design Exercise

Task 1: Analyze Baseline Project for System Condition Violations

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Task #1 Describe Current Situation					Task #2 Visualize Full Alignment		Task #3 Implementation		
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Low-VOC adhesives and sealants per LEED standard	X	X	X	X					

A. Establish baseline design criteria

B. Find System Condition Violations

The Natural Step and LEED – Design Exercise

Task 2: Envision a Fully Sustainable Building

INDOOR ENVIRONMENTAL QUALITY

Task #1 Describe Current Situation					Task #2 Visualize Full Alignment		Task #3 Implementation		
Conventional Approach	SC Violations				Sustainable Vision	Strategy	Barriers	Opportunities	LEED Checklist
	1	2	3	4					
Low-VOC adhesives and sealants per LEED standard	X	X	X	X	NO harmful chemicals in ANY product used in interior				

A. Establish a Vision for Each Item

The Natural Step and LEED – Design Exercise

Task 2: Envision a Fully Sustainable Building

INDOOR ENVIRONMENTAL QUALITY

Task #1 Describe Current Situation					Task #2 Visualize Full Alignment		Task #3 Implementation		
Conventional Approach	SC Violations				Sustainable Vision	Strategy	Barriers	Opportunities	LEED Checklist
	1	2	3	4					
Low-VOC adhesives and sealants per LEED standard	X	X	X	X	NO harmful chemicals in ANY product used in interior	All adhesives and sealants have NO VOCs and no “bad chemicals” Eliminate entirely products that don't meet this requirement			

A. Establish a Vision for Each Item

B. Identify Strategies to Achieve Those Goals

The Natural Step and LEED – Design Exercise

Task 3: Develop Implementation Plan

INDOOR ENVIRONMENTAL QUALITY

Task #1 Describe Current Situation					Task #2 Visualize Full Alignment		Task #3 Implementation		
Conventional Approach	SC Violations				Sustainable Vision	Strategy	Barriers	Opportunities	LEED Checklist
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Low-VOC adhesives and sealants per LEED standard	X	X	X	X	NO harmful chemicals in ANY product used in interior	All adhesives and sealants have NO VOCs and no “bad chemicals” Eliminate entirely products that don’t meet our requirements	Products may not exist Alternative products may cost more May impose more costly requirements for adhering materials		

A. Identify Barriers

The Natural Step and LEED – Design Exercise

Task 3: Develop Implementation Plan

INDOOR ENVIRONMENTAL QUALITY

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Low-VOC adhesives and sealants per LEED standard	X	X	X	X	NO harmful chemicals in ANY product used in interior	All adhesives and sealants have NO VOCs and no “bad chemicals” Eliminate entirely products that don’t meet our requirements	Products may not exist Alternative products may cost more May impose more costly requirements for adhering materials	Work with manufacturers to develop new products Save money elsewhere to pay for more costly environmentally preferable approach	

A. Identify Barriers

B. Identify Opportunities



The Natural Step and LEED – Design Exercise

Task 3: Develop Implementation Plan

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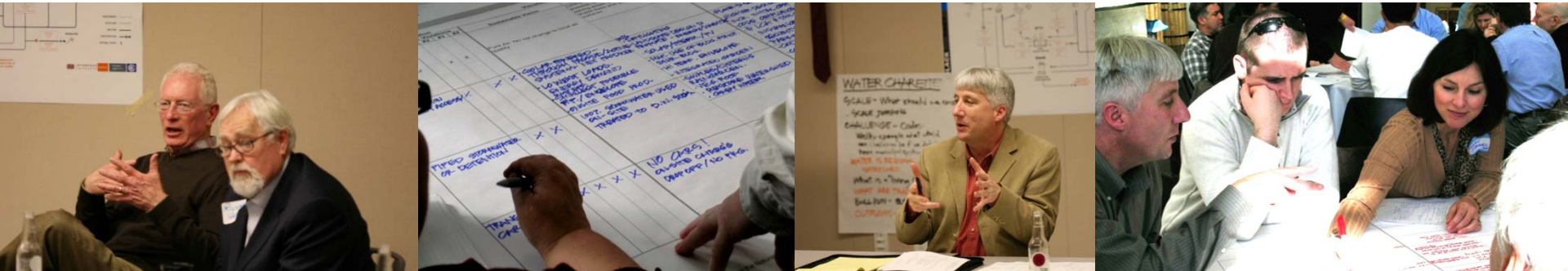
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Low-VOC adhesives and sealants per LEED standard	X	X	X	X	NO harmful chemicals in ANY product used in interior	All adhesives and sealants have NO VOCs and no “bad chemicals”	Products may not exist	Work with manufacturers to develop new products	EQc4.1
						Eliminate entirely products that don't meet our requirements	Alternative products may cost more	Save money elsewhere to pay for more costly environmentally preferable approach	EQc4.2


A. Identify Barriers

B. Identify Opportunities

C. Plug Into LEED Scorecard

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