GREEN BUILDING DESIGN DELIVERABLES

Version 1.4 May 5, 2007

1. INTRODUCTION

1.1 Context for LEED Certification:

- The average North American spends 90% of his/her time in buildings.
- Buildings construction, operation and demolition have significant environmental impacts:
 - 30% of greenhouse emissions in Canada,
 - 38% of total Canadian secondary energy use
 - 12% of our fresh water withdrawals
 - 15% to 40% of landfills is from building construction waste
 - 40% (3 billion tons annually) of raw materials globally
- Achieving the LEED (Leadership in Energy and Environmental Design) certification will assist to reduce the building's impact on the environment, conserve energy, save money & improve the indoor environment.
 - To do this requires:
 - Meeting all 7 LEED prerequisites
 - Achieving the appropriate number of the 70 possible LEED credits
 - Completing necessary LEED documentation for prerequisites & credits
 - Submitting a complete application for certification to CaGBC
 - Providing any supplementary documentation required by CaGBC to achieve LEED certification.

1.2 *Purpose of this Document*

- This document is intended to define deliverables required at each stage of the design of a green building in order to achieve LEED certification (aka Green Building Design Deliverables).
 - These deliverables are essential to be completed at the prescribed step in the process, in order to maximize LEED points and minimize capital costs.
 - These deliverables can be achieved in a multitude of ways; however, it has been shown that an Integrated Design Process (IDP) can save time and cost as well as improving effectiveness.

2. DELIVERABLES

Project Phase / Green Building Design Deliverable				Done	
PR	E-PRO	JECT (p	orior to	Designers being hired)	
1.	Scope	(Owne	r's Requ	uirements/Design Intent)	
	a.	Progra etc.)	am (area	as, functionality, quality, special features, #'s of people,	
	b.		als, Ind	I/Sustainability Vision (1-2 pages re: Site, Water, Energy, oor Environmental Quality and/or LEED rating (ex. LEED	
2.	Sched	edule (High level expectations regarding occupancy and major milestones)			
	a.	•		nes (Consultants hired, Development Permit, Building er, Occupancy)	
3.	Budge	lget (High level expectations regarding budgets by major category)			
	a.	Projec	t Manag	gement, Consultants, Contractors, etc.	
		i.		r break down if available (sub-consultants, sub- ctors, etc.)	
4.	People	9			
	a.	(i.e. in LEED	clude ov	cription of organization including reporting & approvals wner, staff, consultants & contractors (with emphasis on – LEED Coordination/Documentation, Contractor c.)	
	b.	Gener	al state	ment on performance management	
		i.	Critica	I Success Factors (i.e.Goals/Targets)	
		ii.		ptual thoughts on recognition & motivation of staff, tants & contractors	
		iii.	Approa	ach to be used to hire consultants	
			1.	Consultant reporting (directly to owner or through lead consultant)	
			2.	Competition or negotiated	
			3.	Fees (break down by Phase; basis of fees (ex. %, fixed fees, cost plus, etc.)	
			4.	Vision re: alignment of interests of consultants to encourage Integrated Design (i.e. shifting of construction costs between trades/consultants).	

SCHEMATIC (CONCEPT) DESIGN	Done
1. Scope (Designers' Response to Owner's Requirements/Design Intent)	
a. Architectural Concept	
i. Narrative of concept & alternatives	
ii. Conceptual floor plans	
iii. Conceptual Building Elevations	
iv. Conceptual Perspective Views	
v. Narrative of special features & quality issues	
vi. Envelope concept by exposure (i.e. direction)	
1. Areas (walls, windows, doors)	
2. U – Values (walls, windows, doors)	
b. Structural Concept	
i. Narrative on Concept	
ii. Schematic/cartoon of structural concept	
c. Mechanical Drawings & Specifications	
i. Narrative on Concept	
ii. Schematic/cartoons of HVAC, Water, Sewage, gas, etc.	
iii. List of major equipment noting sizes (KW, lps, etc.)	
iv. Mechanical power density (watts/sq.m.)	
d. Electrical Drawings & Specifications	
i. Narrative on Concept	
ii. Schematic/cartoon of electrical concept	
iii. Lighting power density (watts/sq.m.) by functional area	
e. Energy Simulation	
 Energy simulation based on concept design noting by major function (i.e. heating, cooling, lighting, fans, pumps, etc.) 	
1. % energy saving relative to baseline	
2. % energy cost saving relative to baseline	
3. LEED points the conceptual design achieves	
f. LEED Management	
i. LEED scorecard noting who is responsible for each credit.	
g. Drawings & Documentation	
 Table of Contents of drawings to indicate number & type of drawings 	

2. Schedule (Conceptual level CPM) noting major milestones				
a. IDP & Design Coordination Meeting dates				
b. Public meeting dates				
c. Development Permit submission & approval				
d. 50% Drawing completion				
e. Building Permit submission & approval				
f. Tender request & close				
g. Contract award				
h. Commissioning				
i. Occupancy				
3. Budget (Conceptual level budgets by major category)				
a. Project Management, Consultants, Contractors, etc.				
 Further break down if available (sub-consultants, sub- contractors, etc.) 				
4. People				
 a. Organization chart noting reporting & approvals (i.e. include owner, staff, consultants & contractors (with emphasis on LEED players – LEED Coordination/Documentation, Contractor Champion, etc.) 				
b. Performance Management				
i. Critical Success Factors (i.e.Goals/Targets)				
 ii. Performance Reporting methodology (frequency, process, etc.) 				
1. Staff				
2. Consultants				
3. Contractors				

			OPMENT DOCUMENTS	Done	
1.	Scope				
	а.	Archite	ectural Drawings & Specifications		
		i.	Refined narrative on concept		
		ii.	Refined floor plans including millwork		
		iii.	Refined Building Elevations		
		iv.	Refined Perspective Views		
		V.	Narrative & details on refinement of special features & quality issues		
		vi.	Refined envelope concept		
			1. Areas (walls, windows, doors)		
			2. U – Values (walls, windows, doors)		
	b.	Struct	ural Drawings & Specifications		
		i.	Refined Schematic/cartoon of structural		
		ii.	DD drawings		
		iii.	Draft Specification		
	C.	Mecha	anical Drawings & Specifications		
		i.	Refined narrative on Concept		
		ii.	Updated schematic/cartoon of mechanical concept		
		iii.	List of major equipment noting sizes (HP, lps, etc.)		
		iv.	Mechanical power density (watts/sq.m.)		
		۷.	DD drawings		
		vi.	Draft mechanical specification		
	d.	Electrical Drawings & Specifications			
		i.	Refined narrative on Concept		
		ii.	Refined schematic/cartoon of electrical concept		
		iii.	Lighting power density (watts/sq.m.)		
		iv.	DD drawings		
		۷.	Draft electrical specification		
	e.	Energ	y Simulation		
		i.	Energy simulation based on design development design noting % energy cost saving & LEED points		
	f.	LEED	Management		
		i.	LEED scorecard with NO uncertain credits (i.e. no ??) other than contractor credits		

tion tracking report noting current status				
g. General				
Contents of drawings				
2. Schedule Updated to DD				
3. Budget Updated to DD				
art noting reporting & approvals				
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'S				
	ation tracking report noting current status ter Templates completed by professional ve to concept design Contents of drawings art noting reporting & approvals nt Reports ts			

ONSTR	RUCTION	DOCUMENTS	Done	
1. Scop	be			
a	a. Archite	ectural Drawings & Specifications		
	i.	Refined narrative on concept		
	ii.	Refined floor plans including millwork		
	iii.	Refined Building Elevations		
	iv.	Refined Perspective Views		
	V.	Narrative & details on refinement of special features & quality issues		
	vi.	Refined envelope concept		
		1. Areas (walls, windows, doors)		
		2. U – Values (walls, windows, doors)		
b	b. Struct	ural Drawings & Specifications		
	i.	Updated Schematic/cartoon of structural		
	ii.	CD drawings		
	iii.	Draft Spefication		
C	. Mecha	anical Drawings & Specifications		
	i.	Updated narrative on Concept (if required)		
	ii.	Updated schematic/cartoon of mechanical concept		
	iii.	List of major equipment noting sizes (HP, lps, etc.)		
	iv.	Mechanical power density (watts/sq.m.)		
	۷.	CD drawings		
	vi.	Draft mechanical specification		
Ċ	I. Electri	Electrical Drawings & Specifications		
	i.	Refined narrative on Concept		
	ii.	Refined schematic/cartoon of electrical concept		
	iii.	Lighting power density (watts/sq.m.)		
	iv.	CD drawings		
	۷.	Draft electrical specification		
e	e. Energ	y Simulation		
	i.	Energy simulation based on design development design noting % energy cost saving & LEED points		
f	. LEED	Management		
	i.	LEED scorecard with NO uncertain credits (i.e. no ??) other than contractor credits		

	ii. LEED Documentation tracking report noting current status				
	iii. DRAFT LEED Letter Templates completed by professional				
	responsible relative to concept design				
	g. General				
	i. Final Table of Contents of drawings				
2.	2. Schedule Updated to CD				
3.					
4.	People				
	a. Updated Organization chart noting reporting & approvals				
	b. Performance Management Reports				
	1. Staff				
	2. Consultants				
	3. Contractors				