

GREEN BUILDING OPTION - DESIGN and COST CRITERIA

Project Name		ABC-XYZ Office Building					
Description / Space		Intensive Green Roof Option				February 4, 2008	
Parameters	10,000.	SQFT	Green Roof Area	Project Breakdowns			
		SQFT	Sloped Roof Area	Base / Options	Option - Roof 2		
	1,000.	SQFT	Walkway / Paver Area	Area Description	Intensive Green Roof		
	430.	LNFT	Perimeter Of Green Roof				
Quantity / Multiplier	1.			Approx. Cost	\$380,093		
System	Qty	U/M	Criteria Selection	System	Qty	U/M	Criteria Selection
Roof Deck Surface Conditioner	10,000.	SQFT	Roofing - Liquid Rubber Membrane - Standard Coating				
Roofing Membrane or Coating	10,000.	SQFT	EPDM Single Ply Membrane Roofing - 45 mil	Wind Blanket	10000	SQFT	Single Net Biodegradable Blanket with Stakes
Roof Perimeter Flashing	430.	SQFT	Flexible Flashing - PVC - .056" Thick	Shrub - Tree Support	600	SQFT	Green Roof Shrub / Tree Root Ball Support - St. Stl. Grid
				Additional Shrub - Tree Support			None Required
Root Stop	10,000.	SQFT	Root Stop for Green Roof - Rubberized Asphalt				
Additional Root Stop			None Required	Irrigation - Drip Line	5000	LNFT	Drip Line Irrigation Tubing with Fittings - Heavy Duty
Insulation	10,000.	SQFT	Polyisocyanurate Roof Insulation - 1-1/2" Thick	Irrigation - Drip Line Controller	1	EACH	Drip Line Irrigation Controller - Four Zone + Soil Moisture Sensor
Drain - Aeration - Water Retention Panel	10,000.	SQFT	Drain / Aeration / Water Ret. Panel - Polystyrene + Filter Fabric				
Moisture Retention & Grow Medium Mats	10,000.	SQFT	Moisture Ret. Mat - Needle-Punched Synthetic Fibers	Edging	1000	LNFT	Green Roof Lightweight Aluminum Edging - 2-1/2" H
Aggregate	10,000.	SQFT	Expanded Shale on Green Roof - 2" Avg. Depth	Roof Pavers & Walkways	1000	EACH	Concrete Roof Paver - Light Weight - 24" x 24" x 1-1/2"
Filter Fabric	10,000.	SQFT	Non-Woven Geotextile Fabric - Extra Strength				
Drain Pipe	430.	LNFT	Flexible HDPE Pipe - Perforated - 2"	Crane to Hoist Material	3	DAYS	Mobile Crane - Wheel Type - 20 Ton
Additional Drain - Aeration - Water Retention Panel			None Required				
Modular Tray System			None Required				
Sloped Roof Containment			None Required				
Soil - Engineered Lightweight	10,000.	SQFT	Engineered Lightweight Soil - Common - 12" Deep				
Additional Soil - Engineered Lightweight			None Required				
Planting - Turf Grass			None Required				
Planting - Ground Cover	10000	SQFT	Landscaping Ground Cover - Standard				
Planting - Additional Ground Cover			None Required				
Planting - Ornamental Grass			None Required				
Planting - Additional Ornamental Grass			None Required				
Planting - Shrubs	50	EACH	Average Shrub - Small				
Planting - Additional Shrubs			None Required				
Planting - Trees	10	EACH	Common Shade Tree - Small				
Planting - Additional Trees			None Required				
Planting - Pre-Seeded & Vegetated Mats			None Required				

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Comments and Clarifications		
<p align="center">General Overview of a Green Roof</p> <p>There are many variables to a green roof of which the main components may consist of the following:</p> <ul style="list-style-type: none"> * Waterproofing - Normally a single ply membrane or asphalt saturated coating. * Root Stop or Barrier - Required to protect against damage from root growth. * Insulation - Normally EPS or Polyiso. * Drain / Aeration / Water Retention Panels * Moisture Retention Mat - Used to wick water from one area to another and protect the roof membrane. * Grow Mats or Media - Important where the depth and weight of soil must be minimal. * Aggregate - Provides both good drainage and moisture storage. * Drain Pipe - Keeps excessive water from pooling and sitting on the roof. * Filter Fabric - Separates the drainage layer from the soil or growing media. * Engineered Lightweight Soil - A special green roof mix of soil and lightweight aggregate. * Modular Tray System - Help to minimize installation time and reduce maintenance. * Sloped Roof Containment and Restraints * Pre-Seeded and Vegetated Mats - Can reduce the installation but may require start-up irrigation. * Plants and Ground Cover * Wind Blanket - For the safety and security of keeping the plants and media in place. * Shrub and Tree Support - Either a ball support system or guy wires and anchors. * Irrigation System - Usually a drip system with moisture sensor control. * Pavers and Walkways. <p align="center">Types of Green Roofs</p> <p>Extensive Systems</p> <ul style="list-style-type: none"> - Lightweight and good for sloped roof and existing roof installations. - Typically is only 1" to 6" deep with a saturated weight of 8 to 45 pounds per sqft. - Components may be as simple as the waterproofing , root stop, drainage mat, moisture retention mat, growing media and pre-vegetated mat. <p>Intensive Systems</p> <ul style="list-style-type: none"> - Deeper soil that can grow small trees and shrubs as well as turf and vegetation - Complete system can be 6" to 24" deep with a saturated weight of 50 to 150 pounds per sqft. - System can include all of the compnents listed above and often requires addition structural support. <p>Hybrid (Semi-Intensive) Systems</p> <ul style="list-style-type: none"> - A combination of the two systems. The extensive system is installed in weight sensitive areas and the intensive system is installed in load bearing areas. 		
Kisent Budgetware & Estimating System		

Kisent Corporation

Project: ABC-XYZ Office Building

Lombard, Illinois

Date: 2/4/08

Description	Quantity	U/M	Unit Price	Unit Price Ext
Intensive Green Roof				
Roofing - Liquid Rubber Membrane - Standard Coating	10000	SQFT	\$4.10	\$41,000.00
EPDM Single Ply Membrane Roofing - 45 mil - Fully Adhered	10000	SQFT	\$1.99	\$19,900.00
Flexible Flashing - PVC - .056" Thick	430	SQFT	\$3.10	\$1,333.00
Root Stop for Green Roof - Rubberized Asphalt	10000	SQFT	\$1.23	\$12,300.00
Polyisocyanurate Roof Deck Insulation - 1-1/2" Thick	10000	SQFT	\$1.04	\$10,400.00
Green Roof Drain / Aeration / Water Ret. Panel - Polystyrene + Filter Fabric	10000	SQFT	\$3.24	\$32,400.00
Green Roof Moisture Ret. Mat - Needle-Punched Synthetic Fibers	10000	SQFT	\$1.15	\$11,500.00
Expanded Shale on Green Roof - 2" Avg. Depth	10000	SQFT	\$1.83	\$18,300.00
Non-Woven Geotextile Fabric - Extra Strength	10000	SQFT	\$0.44	\$4,400.00
Single Wall HDPE Pipe - Flexible - Perforated - 2"	430	LNFT	\$2.26	\$971.80
Green Roof Engineered Lightweight Soil - Common - 12" Deep	10000	SQFT	\$10.89	\$108,900.00
Landscaping Ground Cover - Standard	10000	SQFT	\$5.39	\$53,900.00
Average Shrub - Small	50	EACH	\$39.49	\$1,974.50
Common Shade Tree - Small	10	EACH	\$165.99	\$1,659.90
Erosion Control - Single Net Biodegradable Blanket with Stakes	10000	SQFT	\$0.23	\$2,300.00
Green Roof Shrub / Tree Root Ball Support - St. Stl. Grid	600	SQFT	\$9.47	\$5,682.00
Drip Line Irrigation Tubing with Fittings - Heavy Duty	5000	LNFT	\$2.26	\$11,300.00
Drip Line Irrigation Controller - Four Zone + Soil Moisture Sensor	1	EACH	\$1,687.61	\$1,687.61
Green Roof Lightweight Aluminum Edging - 2-1/2" H	1000	LNFT	\$9.37	\$9,370.00
Concrete Roof Paver - Light Weight - 24" x 24" x 1-1/2"	1000	EACH	\$26.42	\$26,420.00
Mobile Crane - Wheel Type - 20 Ton	3	DAYS	\$1,464.61	\$4,393.83
				<u>\$380,092.64</u>
**** REPORT TOTAL ****				\$380,092.63