

# CITY OF PETERBOROUGH

## ARENA AND AQUATIC COMPLEX

June 1<sup>st</sup>, 2017



## **2. SITE AND PROGRAM**



# BUILDING INFORMATION

Major Intersection	Pioneer Road & Nassau Mills Road
Site Area	89,400.7 m <sup>2</sup> /962,301ft <sup>2</sup>
Construction Start Date	April 2018
Estimated Completion	May 2020

Building Overall GFA	14,571 m <sup>2</sup> / 156,840 ft <sup>2</sup>
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Parking Count	560
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# **3. PRIORITIES & PRINCIPLES**

## ENGAGE FAMILIES

### WELLNESS

- Promote active life style
- Healthy work place
- Accessible
- Green cleaning policy
- Connection with community trails for cycling, walking, hiking, cross-country skiing, etc.

### EDUCATION

- Create a social and educational hub through the arena complex
- Knowledge transfer through educational partnerships with Trent University and Camp Kawartha
- Bridge ecology of natural site with educational campaign, emphasize the outdoor element
- Display of public art

### NATURAL SITE

- Natural habitat protection
- Provide natural and inviting outdoor playground
- Utilize native/drought resistant species in landscaping
- Low maintenance landscape design
- Light pollution reduction - minimize light trespass and reduce sky-glow

### MATERIALS

- Procure local products and materials
- Ensure recycled content is incorporated into project
- Select and use low emissions products and finishes

### STORMWATER MANAGEMENT

- Integrate stormwater management measures with natural landscape features
- Manage stormwater through rainwater collection, bioswales, rain gardens, etc.
- Outdoor water features linked to natural hydrology and stormwater management

### WATER EFFICIENCY

- Limit or eliminate the use of potable water resources for landscape irrigation
- Reduced flow plumbing fixtures

### ENERGY

- Reduce building energy demand
- Heat recovery for hydronic heating, snow melting, and pool water heating
- High performance envelope - bird-friendly design
- Glazing ratio 30/70 - solar shading
- Capture mechanical synergies
- Lighting controls (daylight and occupancy sensors)
- Reduce lighting power density (LED lighting for all spaces)

### TRANSPORTATION

- Increase non-vehicular connectivity to community (bike paths, public transit access, footpaths)
- Install bike racks and change rooms to encourage bike use
- Install electric vehicle charging stations

## PRESERVE, ENHANCE, RESTORE NATURAL ASSETS

## ADAPT AND RESPOND TO CLIMATE CHANGE

# PRIORITIES

## **Energy Efficient Mechanical Systems**

High efficiency mechanical equipment and heat recovery from the refrigeration system

## **Energy Efficient Lighting**

LED lighting will be used throughout the facility and it reduces energy use and reduces the cooling load of the building.

## **Water Efficiency**

Low flow fixtures. Native planting requiring minimal irrigation

## **Efficient Building Envelope**

Low glazing to wall ratio

Highly insulated walls and roof

Efficient Glazing system with frit pattern that reduces solar gain

## **Site**

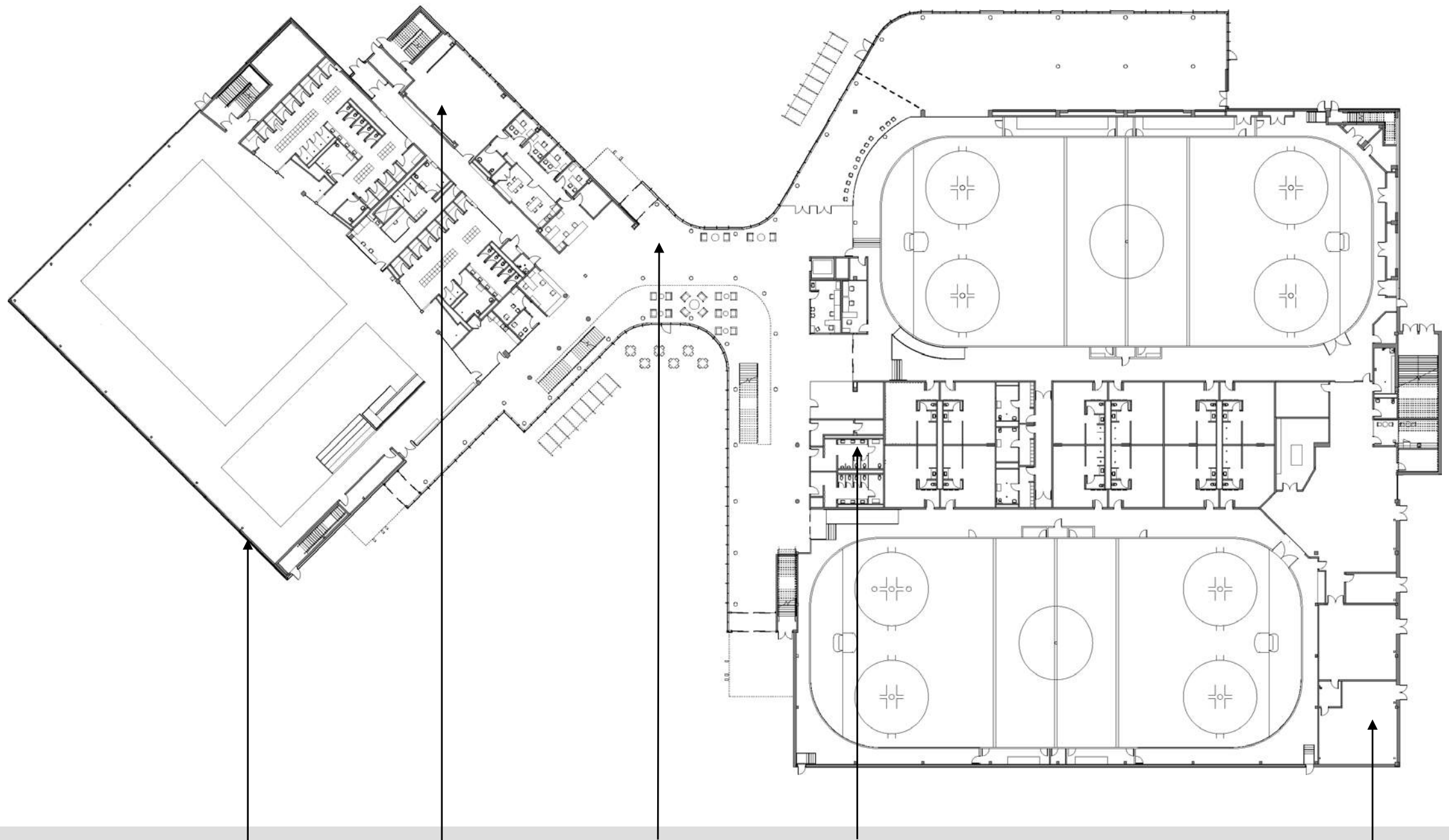
Light pollution reduction

Tree and wetland replacement

Storm water management pond

Integration with existing trails and demonstration of sustainable features

# 4. CURRENT PLANS



# LEVEL 01

Natural Light In  
Pool Area

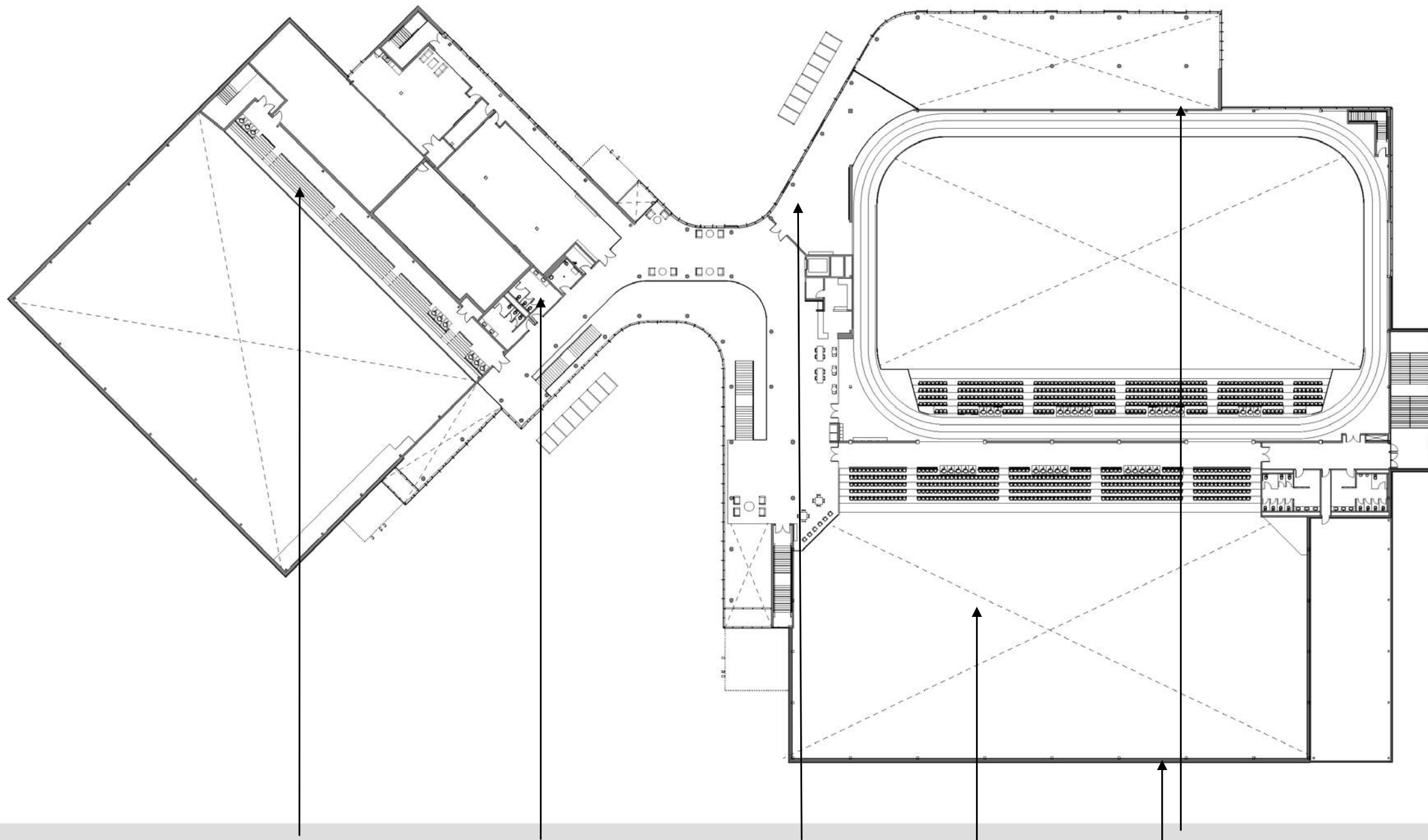
Natural Light In  
Program Spaces

Durable Materials  
& Finishes

Occupancy Sensors  
For Lighting

Energy Recovery From  
Refrigeration System





Natural Light (above)  
In Pool Viewing Area

Occupancy Sensors  
For Lighting

Natural Light In  
Program Spaces

LED Lighting

Limited Glazing In  
Arena Area

# 5. LEED SCORECARD

# 11 LEED 2009 NC EAc1 POINTS

LEED 2009 for New Construction and Major Renovations

May 23, 2017

Energy Savings: 3,245,384ekWh

45.30% better than ASHRAE 90.1-2007

Silver LEED Certification level achieved mostly by successfully reaching goals at the desired credits, such As:  
Credit 1 – “Optimize Energy Performance”  
Credit 6.1 – “Controllability of Systems -  
- Lightning”

5	7	14	Sustainable Sites		Possible Points: 26
T	D	NP			
			Prereq 1	Construction Activity Pollution Prevention	
		1	Credit 1	Site Selection	1
		5	Credit 2	Development Density & Community Connectivity	5
		1	Credit 3	Brownfield Redevelopment	1
		6	Credit 4.1	Alternative Transport--Public Transportation Access	6
1			Credit 4.2	Alt. Transport--Bicycle Storage & Changing Rooms	1
	3		Credit 4.3	Alt. Transport--Low-Emitting & Fuel-Efficient Vehicles	3
	2		Credit 4.4	Alternative Transportation--Parking Capacity	2
	1		Credit 5.1	Site Development--Protect or Restore Habitat	1
1			Credit 5.2	Site Development--Maximize Open Space	1
1			Credit 6.1	Stormwater Design--Quantity Control	1
1			Credit 6.2	Stormwater Design--Quality Control	1
		1	Credit 7.1	Heat Island Effect--Non-roof	1
1			Credit 7.2	Heat Island Effect--Roof	1
	1		Credit 8	Light Pollution Reduction	1

10	0	0	Water Efficiency		Possible Points: 10
T	D	NP			
			Prereq 1	Water Use Reduction--20% Reduction	
4			Credit 1	Water Efficient Landscaping	2 to 4
2			Credit 2	Innovative Wastewater Technologies	2
4			Credit 3	Water Use Reduction	2 to 4

15	16	4	Energy and Atmosphere		Possible Points: 35
T	D	NP			
			Prereq 1	Fundamental Commissioning of Building Energy Systems	
			Prereq 2	Minimum Energy Performance	
			Prereq 3	Fundamental Refrigerant Management	
11	4	4	Credit 1	Optimize Energy Performance	1 to 19
	7		Credit 2	On-Site Renewable Energy	1 to 7
2			Credit 3	Enhanced Commissioning	2
2			Credit 4	Enhanced Refrigerant Management	2
	3		Credit 5	Measurement and Verification	3
	2		Credit 6	Green Power	2

7	0	7	Materials and Resources		Possible Points: 14
T	D	NP			
			Prereq 1	Storage and Collection of Recyclables	
		3	Credit 1.1	Building Reuse--Maintain Existing Walls, Floors, & Roof	1 to 3
		1	Credit 1.2	Building Reuse--Maintain 50% Interior Non-Structure	1
2			Credit 2	Construction Waste Management	1 to 2
		2	Credit 3	Materials Reuse	1 to 2

Materials and Resources, Continued					
T	D	NP			
2			Credit 4	Recycled Content	1 to 2
2			Credit 5	Regional Materials	1 to 2
		1	Credit 6	Rapidly Renewable Materials	1
1			Credit 7	Certified Wood	1

9	5	1	Indoor Environmental Quality		Possible Points: 15
T	D	NP			
			Prereq 1	Minimum Indoor Air Quality Performance	
			Prereq 2	Environmental Tobacco Smoke (ETS) Control	
1			Credit 1	Outdoor Air Delivery Monitoring	1
		1	Credit 2	Increased Ventilation	1
1			Credit 3.1	Construction IAQ Management Plan--During Construction	1
1			Credit 3.2	Construction IAQ Management Plan--Before Occupancy	1
1			Credit 4.1	Low-Emitting Materials--Adhesives and Sealants	1
1			Credit 4.2	Low-Emitting Materials--Paints and Coatings	1
1			Credit 4.3	Low-Emitting Materials--Flooring Systems	1
1			Credit 4.4	Low-Emitting Materials--Composite Wood & Agrifiber	1
1			Credit 5	Indoor Chemical and Pollutant Source Control	1
1			Credit 6.1	Controllability of Systems--Lighting	1
	1		Credit 6.2	Controllability of Systems--Thermal Comfort	1
	1		Credit 7.1	Thermal Comfort--Design	1
	1		Credit 7.2	Thermal Comfort--Verification	1
	1		Credit 8.1	Daylight and Views--Daylight	1
	1		Credit 8.2	Daylight and Views--Views	1

6	0	0	Innovation and Design Process		Possible Points: 6
T	D	NP			
1			Credit 1.1	Innovation in Design: Green Cleaning	1
1			Credit 1.2	Innovation in Design: Green Building Education	1
1			Credit 1.3	Innovation in Design: Low Maintenance Landscaping	1
1			Credit 1.4	Innovation in Design: Integrated Pest Management	1
1			Credit 1.5	Innovation in Design: potential exemplary performance credit	1
1			Credit 2	LEED Accredited Professional	1

3	0	1	Regional Priority Credits		Possible Points: 4
T	D	NP			
		1	Credit 2.1	PRc1 - Durable Building	1
1			Credit 2.2	EAc1 - Optimize Energy Performance	1
1			Credit 2.3	WEc3 - Water Use Reduction	1
1			Credit 2.4	MRc2 - Construction Waste Management	1

55	28	27	Total			
Certified: 40 to 49 points   Silver: 50 to 59 points   Gold: 60 to 79 points   Platinum: 80 +						





PERKINS+WILL