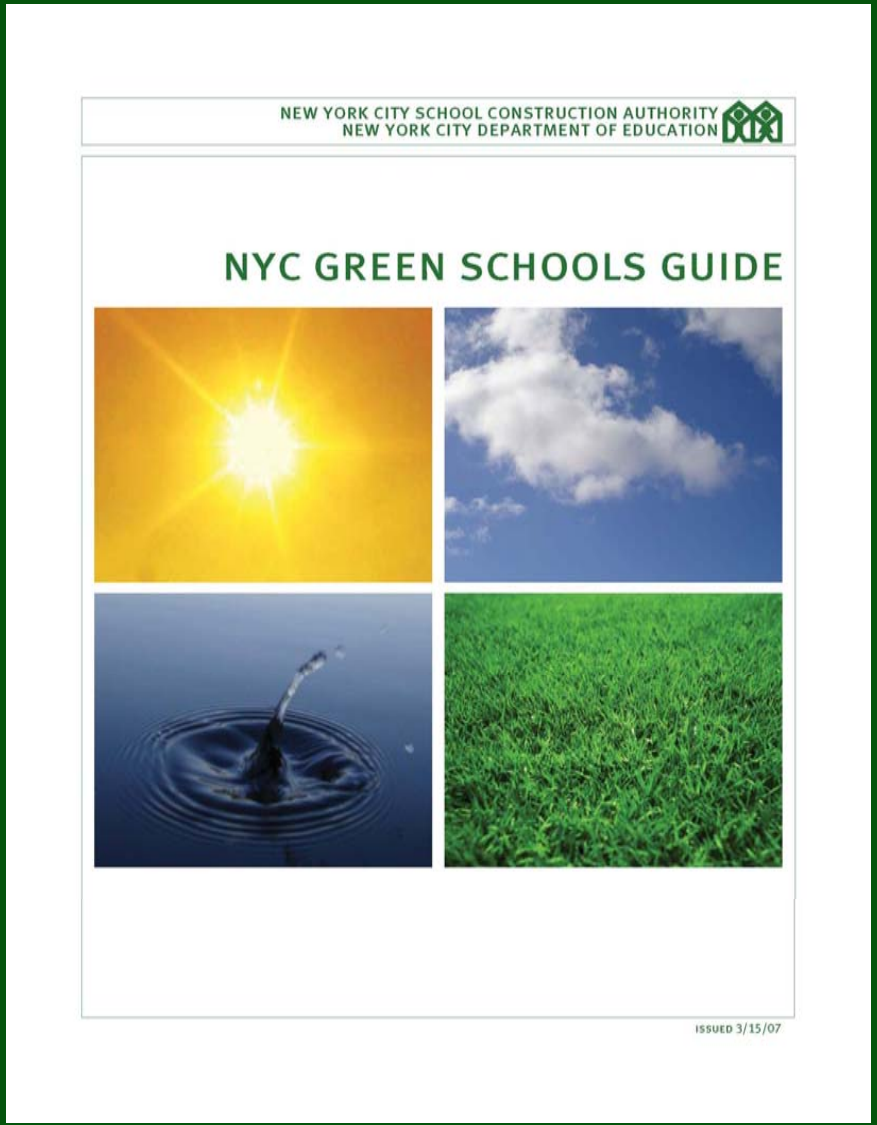
NYC Green Schools Guide and Rating System

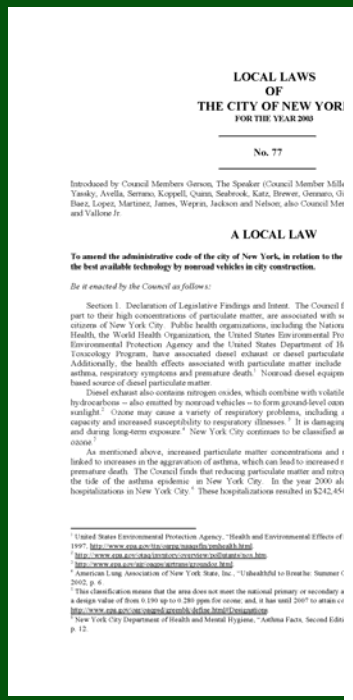
NYC Green Schools Guide



Agenda

Introduction	**SCA/A&E**
• Local Law 86/05 Requirements	Dattner Architects
• Goals/purpose of NYC Green Schools Rating System	SCA A&E
• Development of the rating system for schools	Dattner Architects
Energy modeling	**Viridian LLC / DVL**
• Prototypical modeling	
• CIP Project modeling/calculations analysis	
Design and Construction Certification Process	**Dattner Architects**
• Commissioning Process	DVL
• Overview of Green Schools Rating System	Dattner Architects
• Summary of Standards Revised	Dattner / DVL
Break	
Review of Credits	
Review of S Section Credits	Dattner / DVL
Review of W Section Credits	Dattner / DVL
Review of E Section Credits	DVL Engineers
Review of M Section Credits	Dattner Architects
Review of Q Section Credits	Dattner / DVL
Review of A Section Credits	Dattner / DVL

Sustainability – *it's the Law!*



LOCAL LAWS
OF
THE CITY OF NEW YOR
FOR THE YEAR 2003

No. 77

Introduced by Council Members Gerson, The Speaker (Council Member Mill
Yassky, Avella, Serrano, Koppell, Quinn, Seabrook, Katz, Brewer, Gennaro, Gi
Baez, Lopez, Martinez, James, Weprin, Jackson and Nelson; also Council Mer
and Vallone Jr.

A LOCAL LAW

To amend the administrative code of the city of New York, in relation to the the best available technology by nonroad vehicles in city construction.

Be it enacted by the Council as follows:

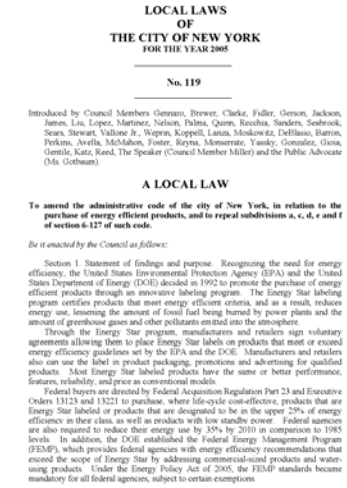
Section 1. Declaration of Legislative Findings and Intent. The Council f
part to their high concentrations of particulate matter, are associated with s
citizens of New York City. Public health organizations, including the Nation
Health, the World Health Organization, the United States Environmental Pro
Environmental Protection Agency and the United States Department of He
Toxicology Program, have associated diesel exhaust or diesel particulate
Additionally, the health effects associated with particulate matter include
asthma, respiratory symptoms and premature death.[1] Nonroad diesel equipm
based source of diesel particulate matter.

Diesel exhaust also contains nitrogen oxides, which combine with volatile
hydrocarbons -- also emitted by nonroad vehicles -- to form ground-level ozon
sunlight.[2] Ozone may cause a variety of respiratory problems, including a
capacity and increased susceptibility to respiratory illnesses.[3] It is damaging
and during long-term exposure.[4] New York City continues to be classified a
ozone.[5]

As mentioned above, increased particulate matter concentrations and
linked to increases in the aggravation of asthma, which can lead to increased
premature death. The Council finds that reducing particulate matter and nitro
the tide of the asthma epidemic in New York City. In the year 2000 al
hospitalizations in New York City.[6] These hospitalizations resulted in $242,45

[1] United States Environmental Protection Agency. "Health and Environmental Effects of
1997. http://www.epa.gov/ttn/oarpg/naaqsfin/pmhealth.html
[2] http://www.epa.gov/otaq/invntory/overview/pollutants/nox.htm.
[3] http://www.epa.gov/air/ozone/actions/eparule.html
[4] American Lung Association of New York State, Inc., "Unhealthful to Breathe: Summer
2002, p. 6.
[5] This classification means that the area does not meet the national primary or secondary a
a design value of from 0.100 up to 0.280 ppm for ozone, and, it has until 2007 to attain co
http://www.epa.gov/oar/oaqps/greenbk/define.html#Designations
[6] New York City Department of Health and Mental Hygiene, "Asthma Facts, Second Editi
p. 12.

LL 77/03
Ultra-low sulfur diesel fuels for Off-road construction vehicles



LOCAL LAWS
OF
THE CITY OF NEW YORK
FOR THE YEAR 2005

No. 119

Introduced by Council Members Gennaro, Brewer, Clarke, Fidler, Gerson, Jackson, James, Liu, Lopez, Martinez, Nelson, Palma, Quinn, Recchia, Sanders, Seabrook, Sears, Stewart, Vallone Jr., Weprin, Koppell, Lanza, Moskowitz, DeBlasio, Barron, Perkins, Avella, McMahon, Foster, Reyna, Monserrate, Yassky, Gonzalez, Gioia, Gentile, Katz, Reed, The Speaker (Council Member Miller) and the Public Advocate (Ms. Gotbaum).

A LOCAL LAW

To amend the administrative code of the city of New York, in relation to the purchase of energy efficient products, and to repeal subdivisions a, c, d, e and f of section 6-127 of such code.

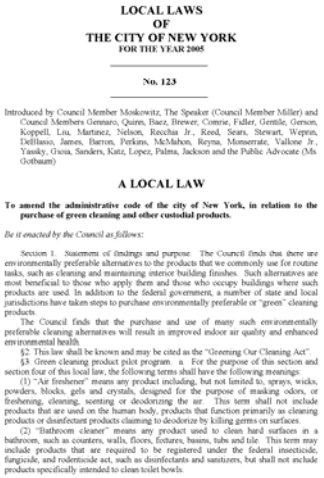
Be it enacted by the Council as follows:

Section 1. Statement of findings and purpose. Recognizing the need for energy efficiency, the United States Environmental Protection Agency (EPA) and the United States Department of Energy (DOE) decided in 1992 to promote the purchase of energy efficient products through an innovative labeling program. The Energy Star labeling program certifies products that meet energy efficient criteria, and as a result, reduces energy use, lessening the amount of fossil fuel being burned by power plants and the amount of greenhouse gases and other pollutants emitted into the atmosphere.

Through the Energy Star program, manufacturers and retailers sign voluntary agreements allowing them to place Energy Star labels on products that meet or exceed energy efficiency guidelines set by the EPA and the DOE. Manufacturers and retailers also can use the label in product packaging, promotions and advertising for qualified products. Most Energy Star labeled products have the same or better performance, features, reliability, and price as conventional models.

Federal buyers are directed by Federal Acquisition Regulation Part 23 and Executive Orders 13123 and 13221 to purchase, where life-cycle cost-effective, products that are Energy Star labeled or products that are designated to be in the upper 25% of energy efficiency in their class, as well as products with low standby power. Federal agencies are also required to reduce their energy use by 35% by 2010 in comparison to 1985 levels. In addition, the DOE established the Federal Energy Management Program (FEMP), which provides federal agencies with energy efficiency recommendations that exceed the scope of Energy Star by addressing commercial-sized products and water-using products. Under the Energy Policy Act of 2005, the FEMP standards became mandatory for all federal agencies, subject to certain exemptions.

LL 119/05
Purchase Energy Star Products



LOCAL LAWS
OF
THE CITY OF NEW YORK
FOR THE YEAR 2005

No. 123

Introduced by Council Member Moskowitz, The Speaker (Council Member Miller) and Council Members Gennaro, Quinn, Baez, Brewer, Comrie, Fidler, Gentile, Gerson, Koppell, Liu, Martinez, Nelson, Recchia Jr., Reed, Sears, Stewart, Weprin, DeBlasio, James, Barron, Perkins, McMahon, Reyna, Monserrate, Vallone Jr., Yassky, Gioia, Sanders, Katz, Lopez, Palma, Jackson and the Public Advocate (Ms. Gotbaum)

A LOCAL LAW

To amend the administrative code of the city of New York, in relation to the purchase of green cleaning and other custodial products.

Be it enacted by the Council as follows:

Section 1. Statement of findings and purpose. The Council finds that there are environmentally preferable alternatives to the products that we commonly use for routine tasks, such as cleaning and maintaining interior building finishes. Such alternatives are most beneficial to those who apply them and those who occupy buildings where such products are used. In addition to the federal government, a number of state and local jurisdictions have taken steps to purchase environmentally preferable or "green" cleaning products.

The Council finds that the purchase and use of many such environmentally preferable cleaning alternatives will result in improved indoor air quality and enhanced environmental health.

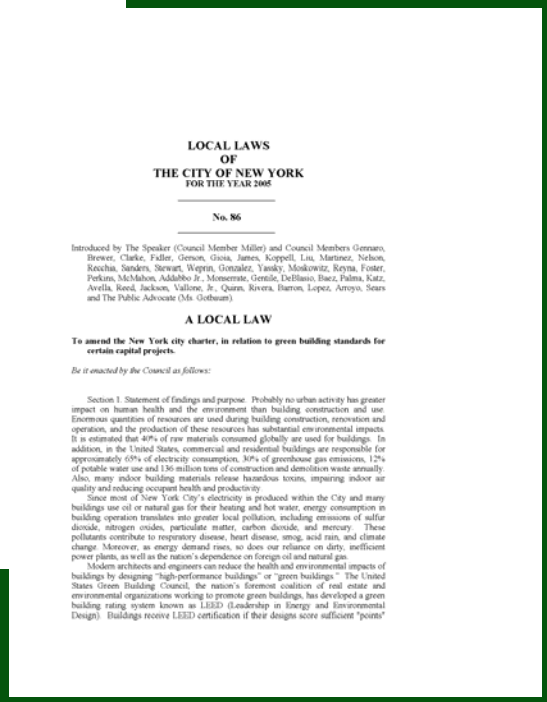
§2. This law shall be known and may be cited as the "Greening Our Cleaning Act".

§3. Green cleaning product pilot program. a. For the purpose of this section and section four of this local law, the following terms shall have the following meanings:

(1) "Air freshener" means any product including, but not limited to, sprays, wicks, powders, blocks, gels and crystals, designed for the purpose of masking odors, or freshening, cleaning, scenting or deodorizing the air. This term shall not include products that are used on the human body, products that function primarily as cleaning products or disinfectant products claiming to deodorize by killing germs on surfaces.

(2) "Bathroom cleaner" means any product used to clean hard surfaces in a bathroom, such as counters, walls, floors, fixtures, basins, tubs and tile. This term may include products that are required to be registered under the federal insecticide, fungicide, and rodenticide act, such as disinfectants and sanitizers, but shall not include products specifically intended to clean toilet bowls.

LL 123/05
Green Cleaning



LOCAL LAWS
OF
THE CITY OF NEW YORK
FOR THE YEAR 2005

No. 86

Introduced by The Speaker (Council Member Miller) and Council Members Gennaro, Brewer, Clarke, Fidler, Gerson, Gioia, James, Koppell, Liu, Martinez, Nelson, Recchia, Sanders, Stewart, Weprin, Gonzalez, Yassky, Moskowitz, Reyna, Foster, Perkins, McMahon, Addabbo Jr., Monserrate, Gentile, DeBlasio, Baez, Palma, Katz, Avella, Reed, Jackson, Vallone, Jr., Quinn, Rivera, Barron, Lopez, Arroyo, Sears and The Public Advocate (Ms. Gotbaum)

A LOCAL LAW

To amend the New York city charter, in relation to green building standards for certain capital projects.

Be it enacted by the Council as follows:

Section 1. Statement of findings and purpose. Probably no urban activity has greater impact on human health and the environment than building construction and use. Enormous quantities of resources are used during building construction, renovation and operation, and the production of these resources has substantial environmental impacts. It is estimated that 40% of raw materials consumed globally are used for buildings. In addition, in the United States, commercial and residential buildings are responsible for approximately 65% of electricity consumption, 30% of greenhouse gas emissions, 12% of potable water use and 136 million tons of construction and demolition waste annually. Also, many indoor building materials release hazardous toxins, impairing indoor air quality and reducing occupant health and productivity.

Since most of New York City's electricity is produced within the City and many buildings use oil or natural gas for their heating and hot water, energy consumption in building operation translates into greater local pollution, including emissions of sulfur dioxide, nitrogen oxides, particulate matter, carbon dioxide, and mercury. These pollutants contribute to respiratory disease, heart disease, smog, acid rain, and climate change. Moreover, as energy demand rises, so does our reliance on dirty, inefficient power plants, as well as the nation's dependence on foreign oil and natural gas.

Modern architects and engineers can reduce the health and environmental impacts of buildings by designing "high-performance buildings" or "green buildings." The United States Green Building Council, the nation's foremost coalition of real estate and environmental organizations working to promote green buildings, has developed a green building rating system known as LEED (Leadership in Energy and Environmental Design). Buildings receive LEED certification if their designs score sufficient "points"

LL 86/05
Green Building Standards for Certain Capital Projects

New York City Local Law 86/05 Requirements for Schools

Two Categories of Projects that must comply:

1

Major Capital Projects:
New Construction, Addition, Substantial Reconstruction of an Existing Building

Substantial Reconstruction = Rehabilitation work on 2 of 3 systems (electrical, HVAC, plumbing) and major construction work on 50% of the buildings floor area.

2

Capital Renovation Projects:
Projects with a smaller scope

(typically equivalent to SCA Capital Improvement Program projects)

New York City Local Law 86/05 Requirements for Schools

Major Projects
New Construction, Additions and Substantial Reconstruction:

Over $2 million

Designed and constructed to comply with green building standards not less stringent than the standards prescribed for buildings designed in accordance with LEED Certified rating.

AND

Over $12 million

- **20% energy cost reduction per LEED-NC 2.1 EA credit 1 (or NY State Energy Code whichever is more stringent).**
- **25% energy cost reduction if added 5% is achievable with 7 year payback period.**
- **30% energy cost reduction if added 10% is achievable with 7 year payback period.**

New York City Local Law 86/05 Requirements for Schools

Capital Repair Projects:
(SCA Capital Improvement Projects)
(Excludes New Construction, Additions and Substantial Reconstruction)

CIP Boiler replacement $2 million or more

Reduce system energy cost 10% minimum

CIP Lighting replacement $1 million or more

Reduce system energy cost 10% minimum

CIP HVAC controls replacement $2 million or more

Reduce system energy cost 5% minimum

All School Projects

For <u>all school projects</u> involving the installation or replacement of plumbing systems for a cost over $500,000 and which require the replacement of plumbing fixtures:

Reduce potable water consumption 20% minimum per LEED 2.2 / WE Credit 3.2

Reduce potable water consumption 30% minimum per LEED 2.2 / WE Credit 3.2 when waterless urinals are approved by NYC/DOB

Local Law 86/2005, LEED and Schools

- **Option of LEED, or other green building standard approved by the Mayor's Office.**
- **Schools to meet standards for LEED *certified* rating.**
- **LEED for Schools Application Guide, under development, was reviewed for reference.**
- **Mayor's Office determined that the NYC Green Schools Guide and Rating System is at least as stringent as LEED-NC 2.2 Certified** Rating.

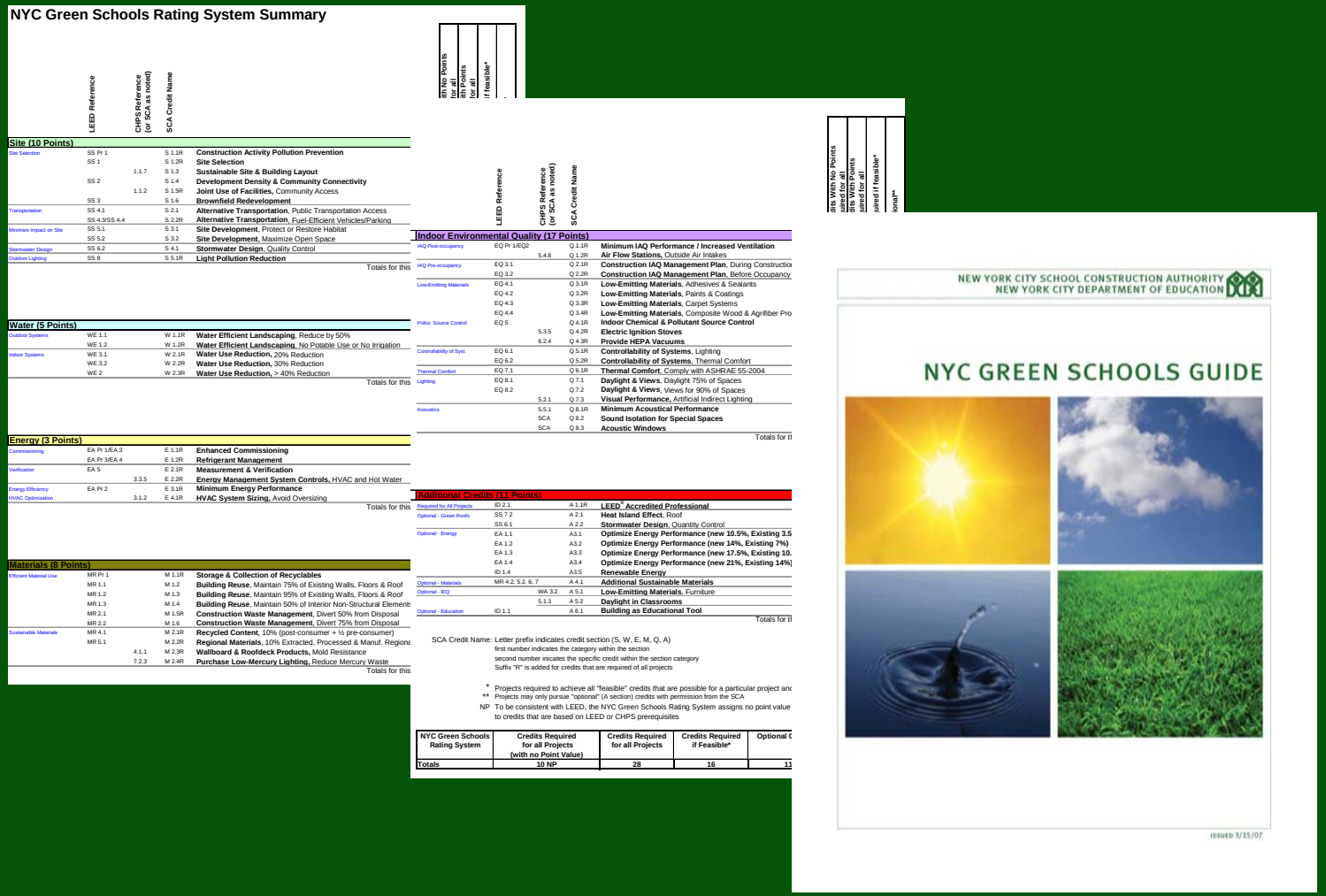
Benefits of Sustainable Schools

- **Conserve energy**
- **Reduce operating costs**
- **Promote a healthy environment**
- **Teach environmental responsibility**
- **Demonstrate commitment to sustainability**

SCA Goals for the Green Schools Rating System

- **Establish sustainable building guideline system that allows projects to achieve sustainability standards equivalent to those for a LEED-NC 2.2 certified or higher rating.**
- **Address the specific sustainable issues in the design, construction and operation of New York City public school buildings.**
- **Reduce the cost and complexity of sustainability for schools.**
- **Incorporate the energy and water conservation requirements mandated by Local Law 86/05.**
- **Include betterment practices specific to schools and to NYC school construction and operation.**

NYC Green Schools Rating System



NYC Green Schools Rating System Summary

	LEED Reference	CHPS Reference (or SCA as noted)	SCA Credit Name	
Site (10 Points)				
Site Selection	SS Pr 1		S 1.1R	**Construction Activity Pollution Prevention**
	SS 1		S 1.2R	**Site Selection**
		1.1.7	S 1.3	**Sustainable Site & Building Layout**
	SS 2		S 1.4	**Development Density & Community Connectivity**
		1.1.2	S 1.5R	**Joint Use of Facilities,** Community Access
	SS 3		S 1.6	**Brownfield Redevelopment**
Transportation	SS 4.1		S 2.1	**Alternative Transportation,** Public Transportation Access
	SS 4.3/SS 4.4		S 2.2R	**Alternative Transportation,** Fuel-Efficient Vehicles/Parking
Minimize Impact on Site	SS 5.1		S 3.1	**Site Development,** Protect or Restore Habitat
	SS 5.2		S 3.2	**Site Development,** Maximize Open Space
Stormwater Design	SS 6.2		S 4.1	**Stormwater Design,** Quality Control
Outdoor Lighting	SS 8		S 5.1R	**Light Pollution Reduction**
				Totals for this
Water (5 Points)				
Outdoor Systems	WE 1.1		W 1.1R	**Water Efficient Landscaping,** Reduce by 50%
	WE 1.2		W 1.2R	**Water Efficient Landscaping,** No Potable Use or No Irrigation
Indoor Systems	WE 3.1		W 2.1R	**Water Use Reduction,** 20% Reduction
	WE 3.2		W 2.2R	**Water Use Reduction,** 30% Reduction
	WE 2		W 2.3R	**Water Use Reduction,** > 40% Reduction
				Totals for this
Energy (3 Points)				
Commissioning	EA Pr 1/EA 3		E 1.1R	**Enhanced Commissioning**
	EA Pr 3/EA 4		E 1.2R	**Refrigerant Management**
Verification	EA 5		E 2.1R	**Measurement & Verification**
		3.3.5	E 2.2R	**Energy Management System Controls,** HVAC and Hot Water
Energy Efficiency	EA Pr 2		E 3.1R	**Minimum Energy Performance**
HVAC Optimization		3.1.2	E 4.1R	**HVAC System Sizing,** Avoid Oversizing
				Totals for this
Materials (8 Points)				
Efficient Material Use	MR Pr 1		M 1.1R	**Storage & Collection of Recyclables**
	MR 1.1		M 1.2	**Building Reuse,** Maintain 75% of Existing Walls, Floors & Roof
	MR 1.2		M 1.3	**Building Reuse,** Maintain 95% of Existing Walls, Floors & Roof
	MR 1.3		M 1.4	**Building Reuse,** Maintain 50% of Interior Non-Structural Elements
	MR 2.1		M 1.5R	**Construction Waste Management,** Divert 50% from Disposal
	MR 2.2		M 1.6	**Construction Waste Management,** Divert 75% from Disposal
Sustainable Materials	MR 4.1		M 2.1R	**Recycled Content,** 10% (post-consumer + ½ pre-consumer)
	MR 5.1		M 2.2R	**Regional Materials,** 10% Extracted, Processed & Manuf. Regiona
		4.1.1	M 2.3R	**Wallboard & Roofdeck Products,** Mold Resistance
		7.2.3	M 2.4R	**Purchase Low-Mercury Lighting,** Reduce Mercury Waste
				Totals for this

	LEED Reference	CHPS Reference (or SCA as noted)	SCA Credit Name	
Indoor Environmental Quality (17 Points)				
IAQ Post-occupancy	EQ Pr 1/EQ2		Q 1.1R	**Minimum IAQ Performance / Increased Ventilation**
		5.4.8	Q 1.2R	**Air Flow Stations,** Outside Air Intakes
IAQ Pre-occupancy	EQ 3.1		Q 2.1R	**Construction IAQ Management Plan,** During Construction
	EQ 3.2		Q 2.2R	**Construction IAQ Management Plan,** Before Occupancy
Low-Emitting Materials	EQ 4.1		Q 3.1R	**Low-Emitting Materials,** Adhesives & Sealants
	EQ 4.2		Q 3.2R	**Low-Emitting Materials,** Paints & Coatings
	EQ 4.3		Q 3.3R	**Low-Emitting Materials,** Carpet Systems
	EQ 4.4		Q 3.4R	**Low-Emitting Materials,** Composite Wood & Agrifiber Pro
Pollut. Source Control	EQ 5		Q 4.1R	**Indoor Chemical & Pollutant Source Control**
		5.3.5	Q 4.2R	**Electric Ignition Stoves**
		6.2.4	Q 4.3R	**Provide HEPA Vacuums**
Controllability of Syst.	EQ 6.1		Q 5.1R	**Controllability of Systems,** Lighting
	EQ 6.2		Q 5.2R	**Controllability of Systems,** Thermal Comfort
Thermal Comfort	EQ 7.1		Q 6.1R	**Thermal Comfort,** Comply with ASHRAE 55-2004
Lighting	EQ 8.1		Q 7.1	**Daylight & Views,** Daylight 75% of Spaces
	EQ 8.2		Q 7.2	**Daylight & Views,** Views for 90% of Spaces
		5.2.1	Q 7.3	**Visual Performance,** Artificial Indirect Lighting
Acoustics		5.5.1	Q 8.1R	**Minimum Acoustical Performance**
		SCA	Q 8.2	**Sound Isolation for Special Spaces**
		SCA	Q 8.3	**Acoustic Windows**
				Totals for t
Additional Credits (11 Points)				
Required for All Projects	ID 2.1		A 1.1R	**LEED® Accredited Professional**
Optional - Green Roofs	SS 7.2		A 2.1	**Heat Island Effect,** Roof
	SS 6.1		A 2.2	**Stormwater Design,** Quantity Control
Optional - Energy	EA 1.1		A3.1	**Optimize Energy Performance (new 10.5%, Existing 3.5**
	EA 1.2		A3.2	**Optimize Energy Performance (new 14%, Existing 7%)**
	EA 1.3		A3.3	**Optimize Energy Performance (new 17.5%, Existing 10.**
	EA 1.4		A3.4	**Optimize Energy Performance (new 21%, Existing 14%)**
	ID 1.4		A3.5	**Renewable Energy**
Optional - Materials	MR 4.2, 5.2, 6, 7		A 4.1	**Additional Sustainable Materials**
Optional - IEQ		WA 3.2	A 5.1	**Low-Emitting Materials,** Furniture
		5.1.3	A 5.2	**Daylight in Classrooms**
Optional - Education	ID 1.1		A 6.1	**Building as Educational Tool**
				Totals for t

SCA Credit Name: Letter prefix indicates credit section (S, W, E, M, Q, A)
first number indicates the category within the section
second number indicates the specific credit within the section category
Suffix "R" is added for credits that are required of all projects

* Projects required to achieve all "feasible" credits that are possible for a particular project and
** Projects may only pursue "optional" (A section) credits with permission from the SCA
NP To be consistent with LEED, the NYC Green Schools Rating System assigns no point value to credits that are based on LEED or CHPS prerequisites

NYC Green Schools Rating System	Credits Required for all Projects (with no Point Value)	Credits Required for all Projects	Credits Required if Feasible*	Optional C
Totals	10 NP	28	16	11

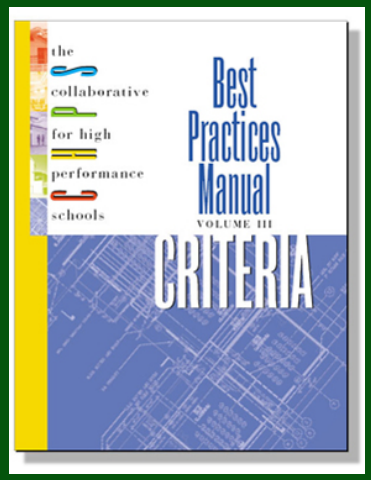
NEW YORK CITY SCHOOL CONSTRUCTION AUTHORITY
NEW YORK CITY DEPARTMENT OF EDUCATION

NYC GREEN SCHOOLS GUIDE

ISSUED 3/15/07

Collaborative for High Performing Schools (CHPS)

- **CHPS includes many school specific betterment credits.**
- **Local Law 86 specifically calls for LEED certification or equivalent.**
- **LEED has a history, detailed reference information, and an on-line log of responses to questions.**



NY-CHPS Version 1.0
High Performance Schools Guidelines

An Appendix of the
New York State Education Department
Manual of Planning Standards

Prepared with Support from:
New York State
Energy Research and Development Authority

Prepared in Cooperation with:
The Collaborative for High Performance Schools, Inc.

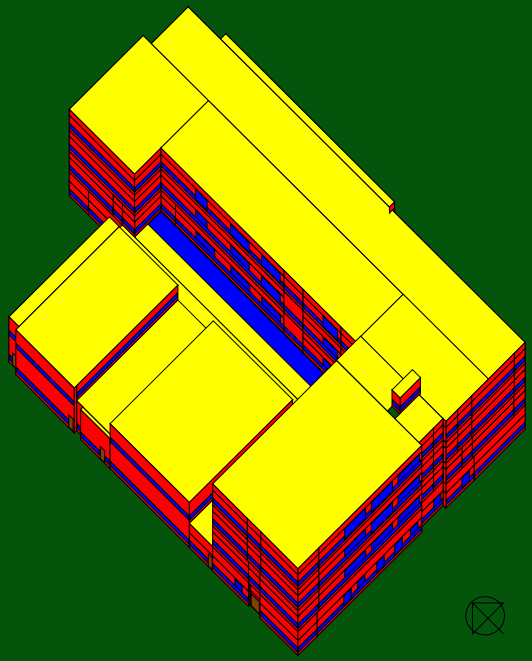
March 2006

Best Practices Review

Comparison By State: Sustainable School Guidelines

State - Author	NY- NYSERDA	NJ - School Construction Corporation	CA - Energy Agency	MA - Energy Agency	WA - Team comprised of energy agencies, architects, superintendents
Guideline System	CHPS	LEED	CHPS	CHPS	CHPS
Distribution of Points:					
Sustainable Sites	15	14	14	14	16
Water Efficiency	3	5	5	6	6
Materials	26	13	11	12	17
Indoor Environmental Quality	47	15	17	23	19
Energy	26	17	24	30	18
District Resolutions			10	13	4
Project Innovation	16	5			4
Total Points Possible	133	69	81	98	84
Total Points Required for Certification	65	26	28	23	38 (Energy=4)
Total Prerequisites	4 SS, 7 EA, 2 MR, 25 EQ	1 SS, 3 EA, 1 MR, 2 EQ	1 SS, 1 WE, 1 EA, 1 MR, 3 EQ	4 SS, 3 EA, 1 MR, 13 EQ,1 DR	2 SS, 1 WE, 1 MR, 3 EA, 3 EQ
Other Requirements	Must meet minimum requirements per Local Law 86 and Executive Order 111	None	Must meet pre-requisite Minimum Energy Perfomance Credit in conjunction with Title 24-2005 California energy standards	Energy=6, Site=4, Water=2, Materials=2, IEQ=9	Energy=4, Must earn points in all credit categories

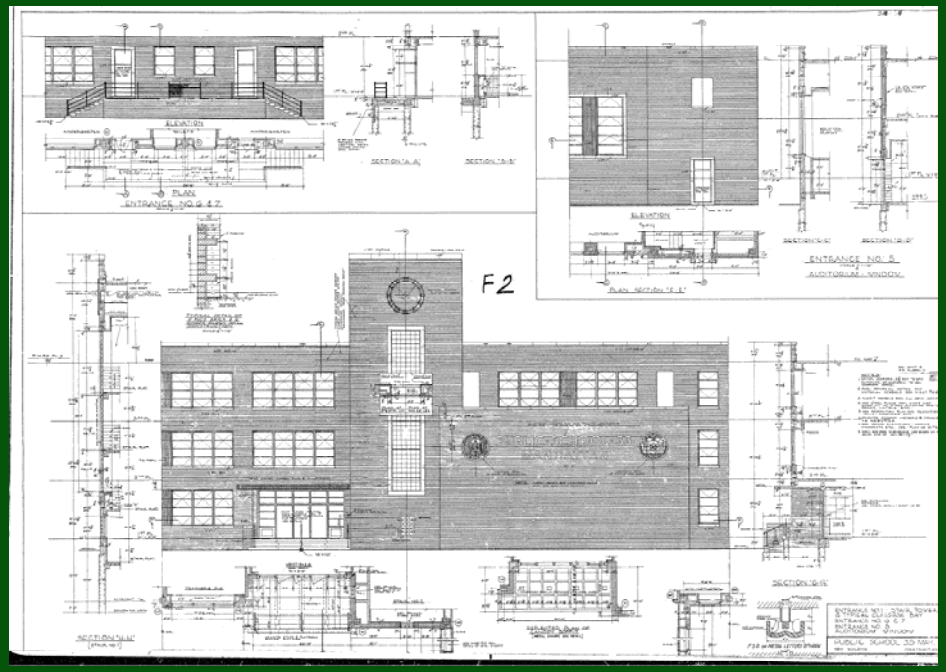
Prototypical Energy Modeling

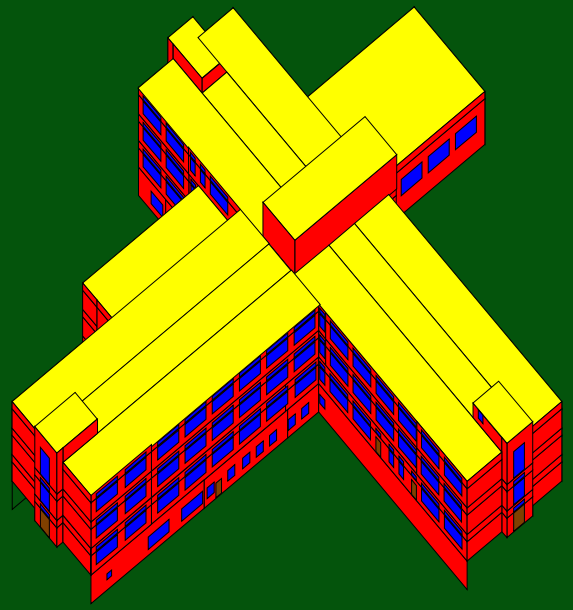


New building model – Intermediate School/High School

- **Based on IS/HS 362, Bronx**
- **11 suites of energy conservation measures modeled**

Prototypical Energy Modeling

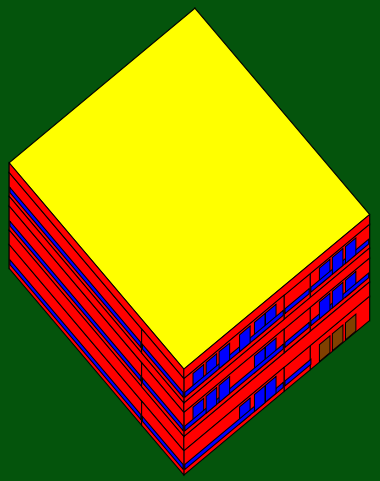




Existing building model

- **Based on PS 33, Manhattan**
- **11 suites of energy conservation measures modeled**

Prototypical Energy Modeling



New building model - ECC

- **Based on PS 228/ECC, Queens**
- **11 suites of energy conservation measures modeled**

Alternative HVAC Systems Modeled

1N	Base design with Fan Powered VAV & electric reheat
2N	Energy Efficiency Measures & FP-VAV & HW reheat
2NAlt	HW FTR, non-fan FP-VAV w/ penthouse condensing boiler
2NG	HW FTR, non-fan FP-VAV w/ rooftop boiler & glycol
4N	FP-VAV w/ HW reheat, RTUs with Chilled Wtr Coils, Modular Air-Cooled Chiller
4NG	FP-VAV w/ HW reheat, RTUs with Chilled Wtr Coils, Modular Water-Cooled Chiller w/ Dry- Cooler & glycol
5N	FP-VAV w/ HW reheat, RTUs with Chilled Wtr Coils, Modular Water- Cooled Chiller
5NAlt	FP-VAV w/ HW reheat, Condensing Boiler, RTUs with Chilled Wtr Coils, Centrifugal Water-Cooled Chiller
6N	HW FTR , Condensing Boiler and RTUs with Ch Wtr Coils, Ice Storage
7N	HW FTR, Condensing Boiler, De-Coupled Classroom Tempering from Ventilation, Dedicated Ventilation Classroom RTUs, Chilled Wtr Modular Water-Cooled Chiller
8N	HW FTR, Condensing Boiler, De-Coupled Classroom Tempering from Ventilation, Dedicated Ventilation Classroom RTUs, De-Coupled Classroom using Absorption Chillers

Energy Efficiency Measures

Table XII: Energy efficiency of the IS/HS 362 design alternatives Compared to ASHRAE 90.1-1999, LEED 2.1, and ASHRAE 90.1-2004 Appendix G for Buildings less than or equal to 150,000 sf and greater than 150,000 sf

	ASHRAE 90.1-1999				ASHRAE 90.1-2004 Appendix G: *Buildings >150,000 sf*		ASHRAE 90.1-2004 Appendix G: *Buildings ≤ 150,000 sf*	
Description of Model Alternates	% Regulated Energy Cost Savings	% Change relative to 1N case	% Total Energy Cost Savings	LEED 2.1 Points	% Total Energy Cost Savings	LEED 2.2 Points	% Total Energy Cost Savings	LEED 2.2 Points
1N	16.40	-	14.25%	1	-10.11%	0	-3.23%	0
2N	23.75	7.36	20.93%	3	11.44%	0	16.97%	1
2N-standard VAV & baseboard	25.83	9.43	22.70%	3	13.42%	1	18.83%	2
2N-glycol	22.46	6.06	19.78%	2	10.15%	0	15.76%	1
4N	22.75	6.35	20.47%	3	10.93%	0	16.49%	1
4N-glycol	20.69	4.29	18.59%	2	8.82%	0	14.51%	1
5N	22.47	6.07	19.90%	2	11.98%	0	17.47%	1
5N - centrifugal	23.96	7.57	21.35%	3	13.56%	1	18.96%	2
6N	31.00	14.61	28.84%	4	25.45%	3	30.11%	4
7N	23.72	7.32	21.00%	3	17.24%	1	22.41%	2
8N	23.77	7.38	21.20%	3	15.62%	1	20.89%	2

Parametric Modeling

Table III: Parametric Study of Effect of Geometry Changes on Energy Savings Versus ASHRAE 90.1-1999 for IS/HS-362 with the HVAC System and Energy Efficient Features of the Preferred Design

Energy Model Designation	Regulated Energy Cost Savings vs. ASHRAE-90.1-1999
2N-Standard VAV & Baseboard: No Gym	23.42%
2N-Standard VAV & Baseboard: No Gym or Auditorium	23.41%
2N-Standard VAV & Baseboard: Classroom area reduce Program/core area split is 65%/35% versus 70%/30 in typical design	24.19%

Energy Conservation Measures

Energy Conservation Measures Systems Summary

The proposed energy efficiency measures are designed to meet LEED NC 2.2 Minimum Energy Performance guidelines. This system achieves energy efficiency primarily through: (1) hydronic heating of classrooms utilizing gas fired modular condensing boilers (2) improved exterior wall insulation (3) spectrally selective low-E glazing and (4) energy efficient lighting controlled by occupancy sensors.

Assembly spaces have dedicated Roof Top Units to allow independent operation of mechanical systems. Carbon dioxide sensors within assembly areas ensure efficient use of energy systems.

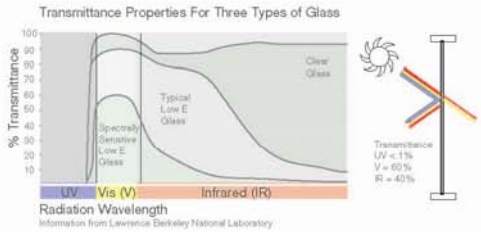
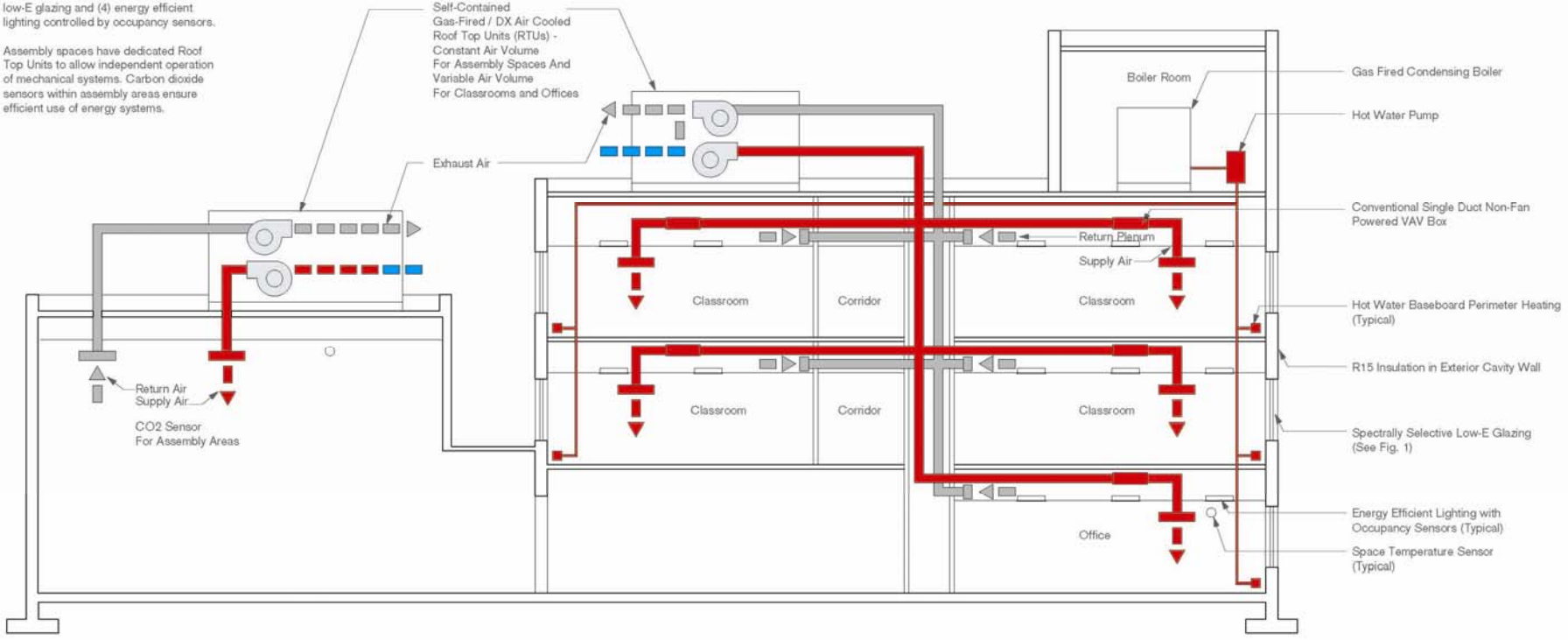


Fig. 1
Laminated spectrally selective low-E coating allows visible daylight and blocks UV transmission while inhibiting infrared light. Graph on left compares light transmission through clear, low-E, and spectrally selective low-E glazing

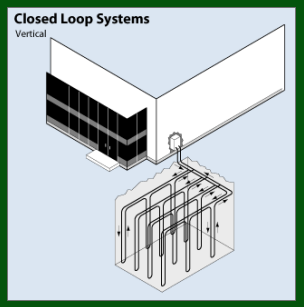
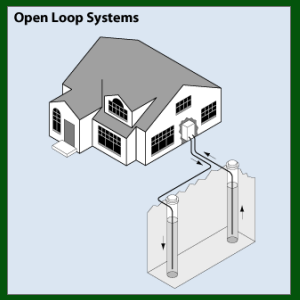
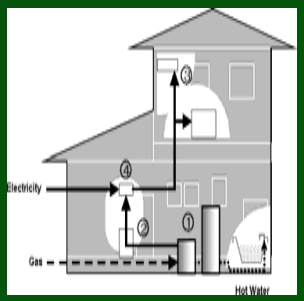


Energy Efficiency Measures

Energy Efficiency Measures Incorporated into Modeled Designs

- **Glass: spectrally selective low-e.**
- **R-15 insulation in cavity between brick and block wythes.**
- **Occupancy lighting control in enclosed offices.**
- **VFD on hot water pumps.**
- **Reduced supply fan static pressure on Auditorium AHU.**
- **Outside air modulation with CO_2 sensors in auditorium and gym.**

Energy Systems Considered

INVESTIGATED ENERGY EFFICIENT SYSTEM		POTENTIAL DRAWBACKS
	**Closed Loop Heat Pump Geothermal Systems**	**Requires an extensive field to install either vertical or horizontal loops (i.e., IS/HS 362, this system will require + 340 bore and a field of approximately 145,000 square feet, or 3.3 acres.)**
	**Open Loop Heat Pump System**	**Minerals contained in the water over a period of time will degrade heat transfer equipment, and shortens the life expectancy of the system**
	**Cogeneration System Utilizing High Pressure Gas Turbines Coupled with Absorption Chillers and Hot Water Heat Exchangers**	**Requires a minimum inlet gas pressure of 75 psig; that level of gas pressure in a "G" occupancy is not allowed by the NYC Building Code A system like this is too complex for a school application.**

CIP Energy Cost Reduction

Table I: Energy Savings Results for Proposed PS-33 Capital Improvement Program Projects

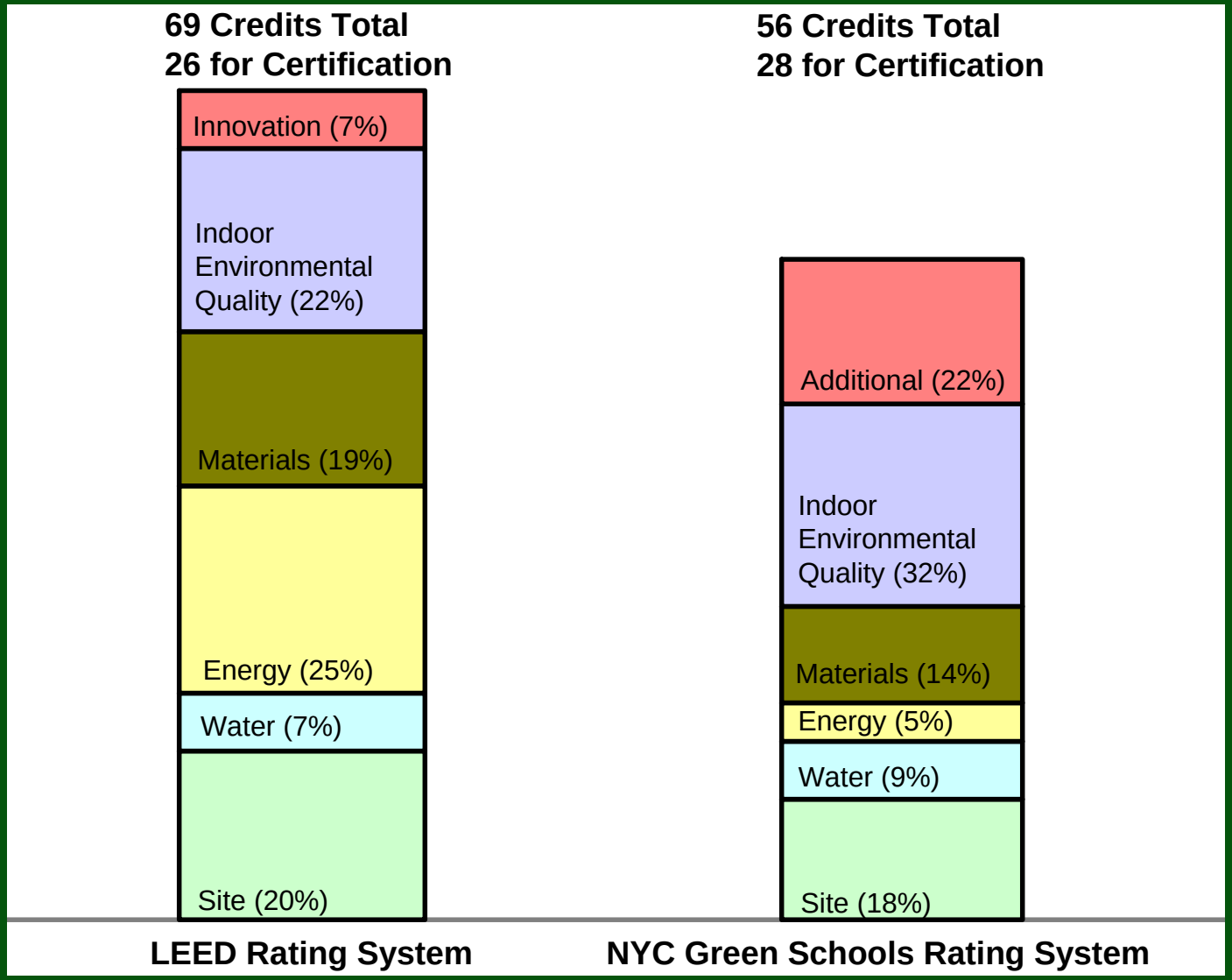
	Total Electric (kWh)	Total Electric Cost ($)	Total Fuel Oil (gal)	Total Fuel Oil Cost ($)	Total Gas (Therm)	Total Gas Cost ($)	Lighting Electric (kWh)	Lighting Electric Cost ($)	Energy Cost Reduction
UTILITY COST INFORMATION									
Existing Building:(Oil-fired Boiler, Matched utility data from energy model)	490,814	$ 51,064	37,568	$ 48,914			313571	$ 32,624	
Existing Building:(Oil-fired Boiler, 2006 Oil Pricing - $2.00/gal, utility data from computer model)	490,814	$ 51,064	37,568	$ 75,431			313571	$ 32,624	
CIP - LIGHTING REPLACEMENT									
									% Reduction in Lighting Energy Cost vs ASHRAE 99
w/ ASHRAE 90.1-1999 Lighting	704,922	$ 73,048					524419	$ 54,343	-
w/ 0.1 W/sf less than ASHRAE 90.1-1999	650,520	$ 67,872					470484	$ 49,088	9.7%
w/ 0.12 W/sf less than ASHRAE 90.1-1999	642,036	$ 67,024					462116	$ 48,242	**11.2%**
w/ 0.2 W/sf less than ASHRAE 90.1-1999	607,863	$ 63,628					428488	$ 44,852	17.5%
CIP - BOILER REPLACEMENT - GAS									
(See note #1 below regarding fuel cost. See note #3 below regarding efficiency comparisons)									% Reduction in Heating Energy Cost vs ASHRAE 99
w/ Code Gas Boiler (80% Combustion Efficiency)					51,167	$ 61,996			-
w/ Code Gas Boiler (BTS-2000 tested w/ 83% Combustion Efficiency)					49,632	$ 60,136			3.0%

CIP Energy Cost Reduction

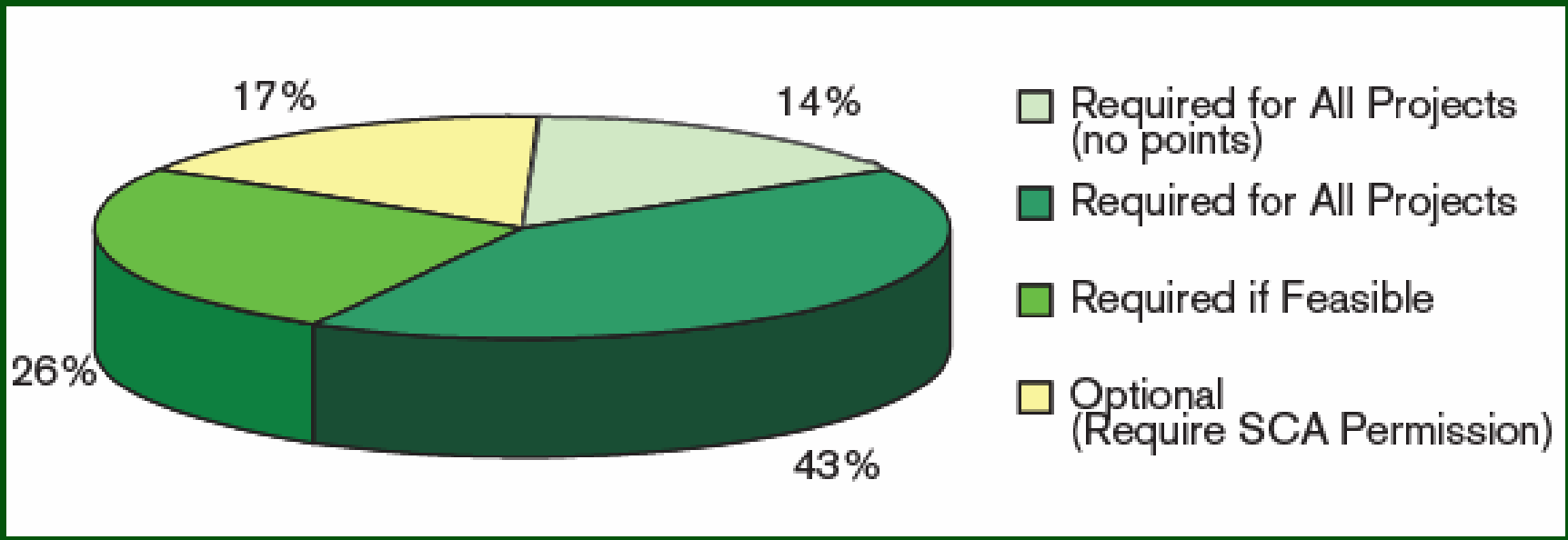
	Total Electric (kWh)	Total Electric Cost ($)	Total Fuel Oil (gal)	Total Fuel Oil Cost ($)	Total Gas (Therm)	Total Gas Cost ($)	Lighting Electric (kWh)	Lighting Electric Cost ($)	Energy Cost Reduction
CIP - BOILER REPLACEMENT - OIL									
(See note #1 below regarding fuel cost. See note #3 below regarding efficiency comparisons)									% Reduction in Heating Energy Cost vs ASHRAE 99
w/ Code Oil Boiler (83% Combustion Efficiency)			33,714	$ 67,428					-
w/ Code Oil Boiler (BTS-2000 tested w/ 85% Combustion Efficiency)			33,040	$ 66,079					2.0%
CIP - HVAC COMFORT CONTROLS									
(See note #1 and #2 below regarding fuel cost. See note #4 for applicability of this "improved" system.)						Total Energy Cost $			% Reduction in Total Energy Cost vs ASHRAE 99 with Ventilation
Code Case: Existing Building with Constant Volume Ventilation of Assembly Spaces (added to PS33 scope - not operational in existing installation)	490,814	$ 51,064	37,568	$ 75,431		$ 126,495			
Improved System: (ONLY for H&V units being replaced) Change to Variable Volume - Variable Temperature Air Handler (Min Flow Ratio = 50%) with CO2 Modulation of Outside Air Ventilation Rate through modulation of VFD.	489,100	$ 50,831	34,480	$ 69,254		$ 120,085			**5.1%**

NYC Green Schools Guide

Rating System Comparison



NYC Green Schools Rating System – Types of Credits



SCA Rating System	Credits Required for all Projects (with no point Value)	Credits Required for all Projects (with point value)	Credits Required if Feasible	Optional Credits (Require SCA permission)	Total Number of Available Credit Points
LEED Based	6 NP	26	12	9	47
Non-LEED Based	7 NP	2	4	2	8
Totals	13 NP	28	16	11	55

SCA Standards – Sustainable Revisions: Division 1- 14

Standard Specifications

New: Sustainable Requirements, Construction Waste Management, Indoor Air Quality Requirements, Permeable Paving And Green Roofs.

Revised: Complying Low-Emitting Materials, Recycled Content Percentages, Additional Documentation Required, Glazing Requirements, Acoustic Partitions.

Design Requirements

New: Architectural Acoustics.

Revised: Building Location, Orientation And Organization, Entrances, Refuse And Recycling, Cafeteria, Trees And Shrubs, Flat Roofs.

Standard Details

New: Green Roofs, Walk-off Grilles.

Revised: Perimeter Wall Construction.

SCA Standards – Sustainable Revisions: Division 15 and 16

Standard Specifications

New: Condensing Boiler Section.

Revised: Almost All Division 15 Sections were revised including section on plumbing fixtures, General Electric Provisions, Lamps And Security Lighting and the addition of an extensive system of devices for Measurement & Validation.

Design Requirements

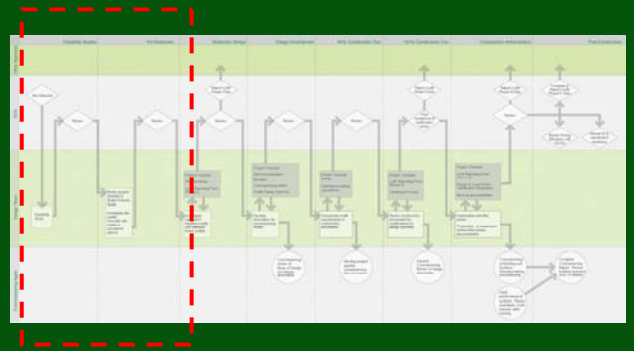
New: LL86 Design Compliance.

Revised: Most of the HVAC Section Design Requirements, HVAC Acoustics, Interior and Exterior Lighting.

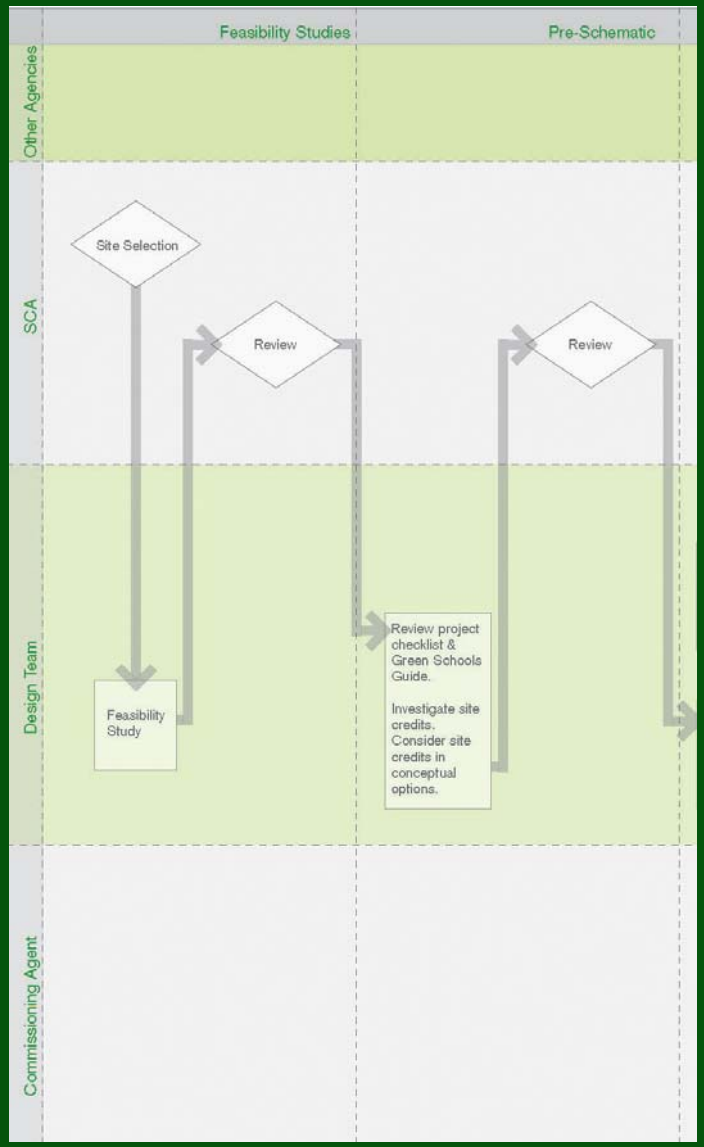
Standard Details

Revised: VAV And CV Control Diagrams, Boiler, Domestic Hot Water And Unit Ventilators, Added BMS Point Lists For All Digitally Controlled Systems.

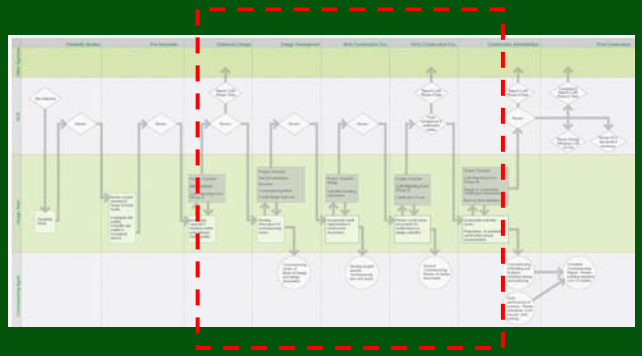
Certification Process: Pre-Design Phases



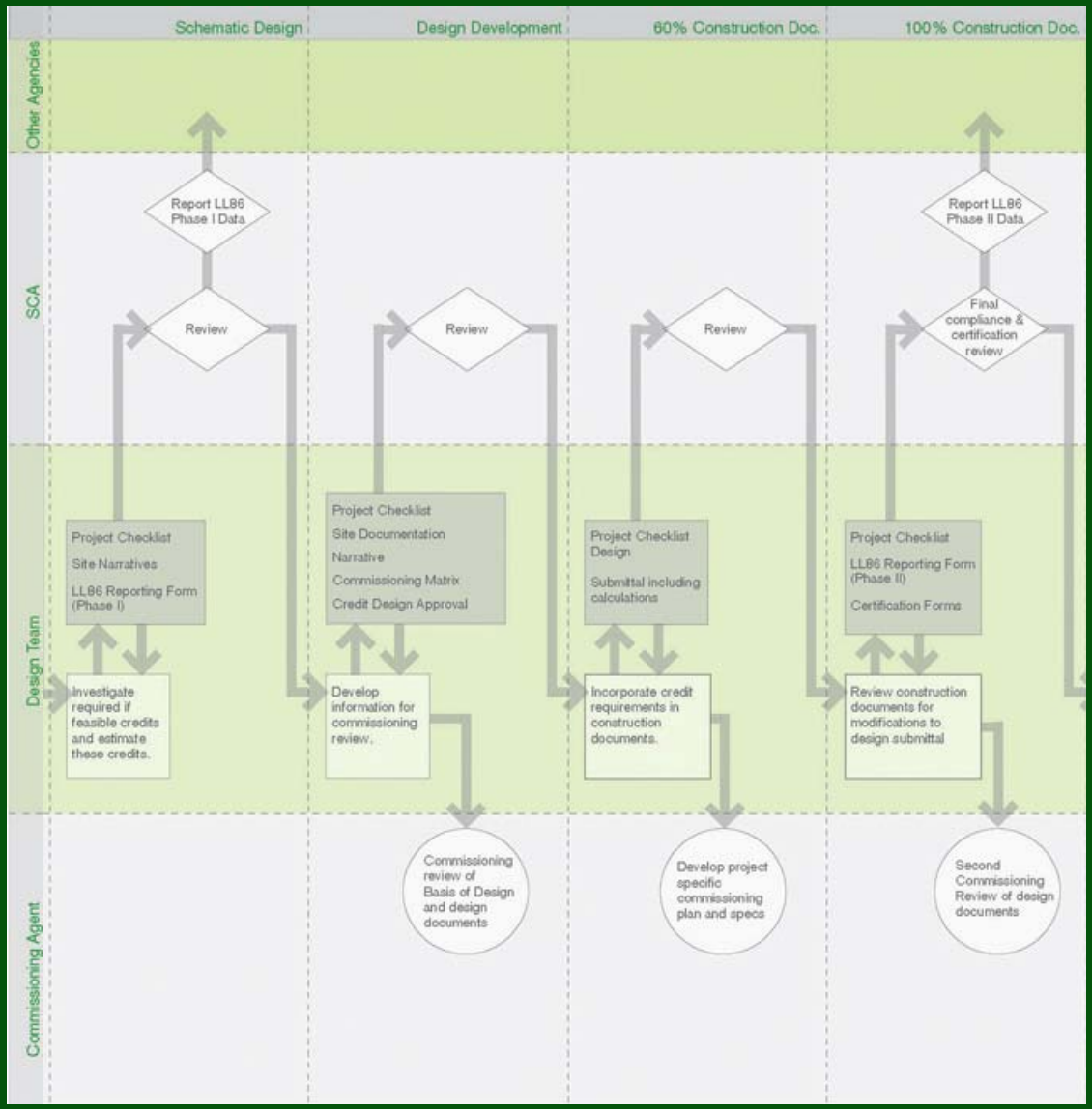
Pre-Design Design Construction



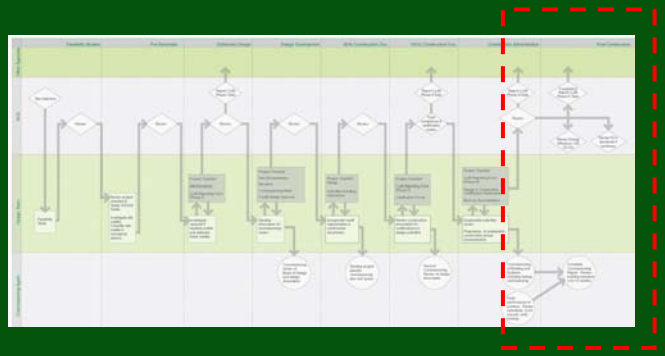
Certification Process: Design Phases



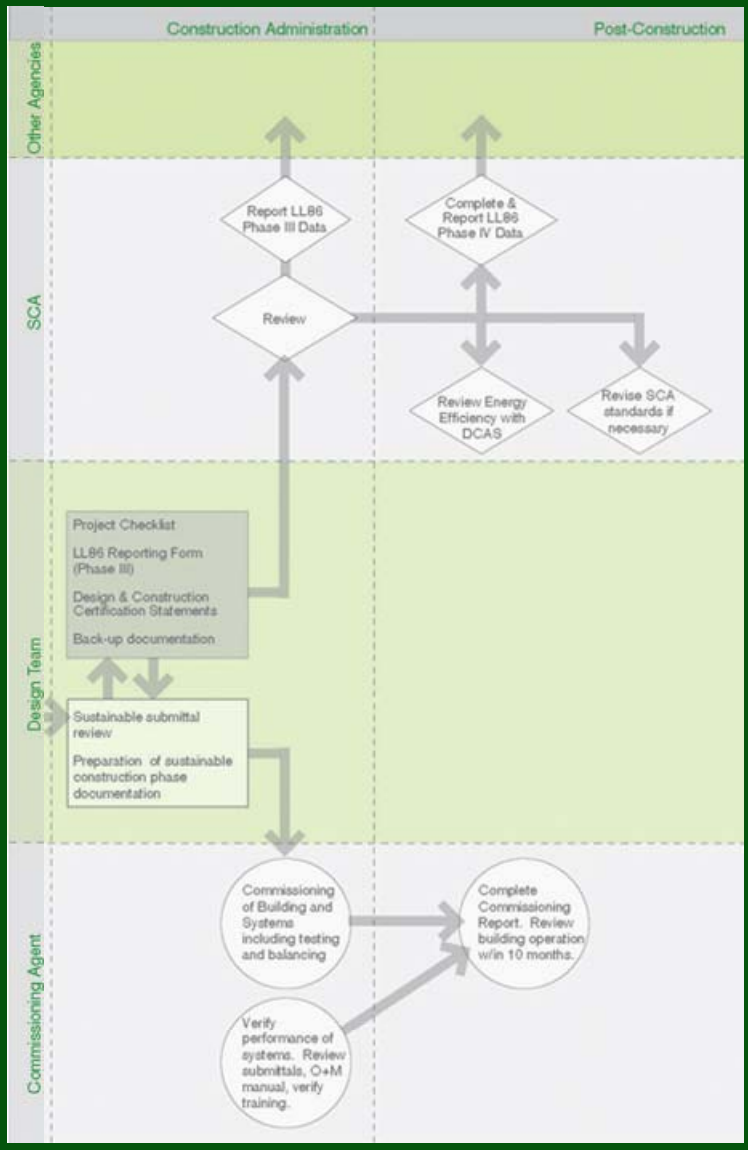
Pre-Design Design Construction



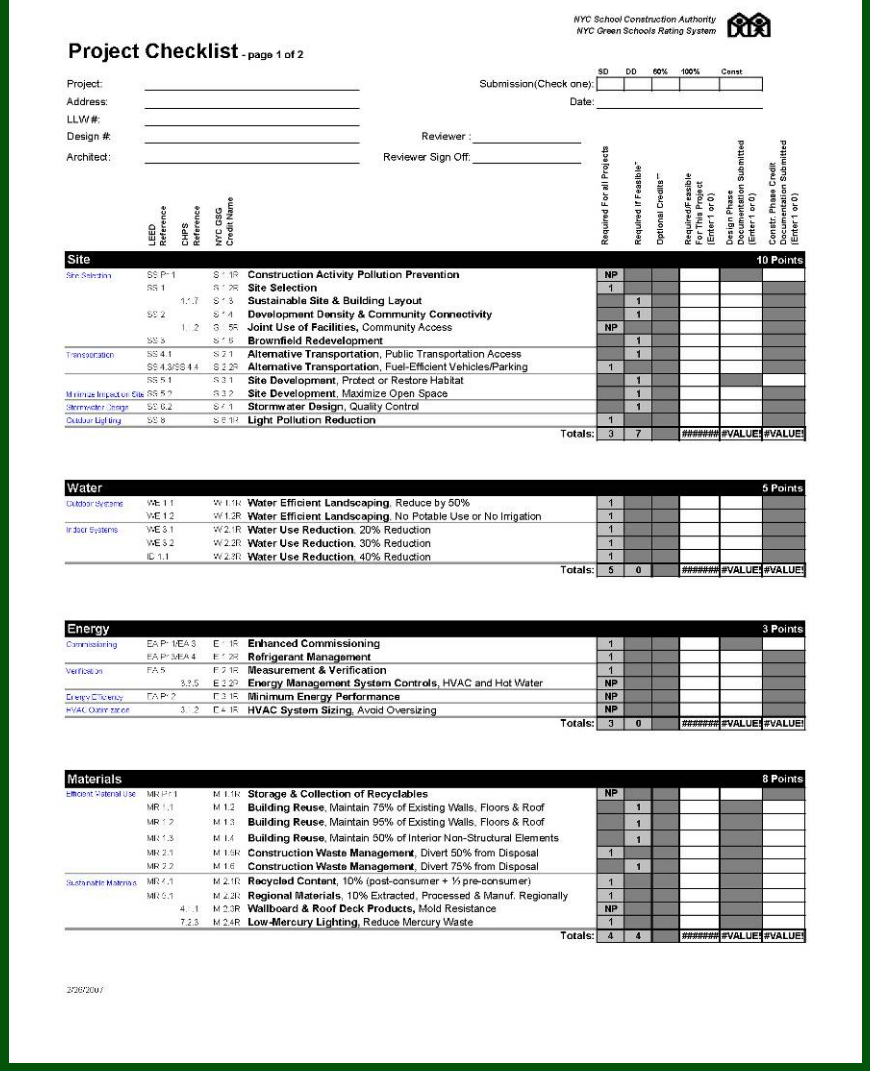
Certification Process: Construction and Post- Construction Phases



Pre-Design Design Construction



Project Checklist Form



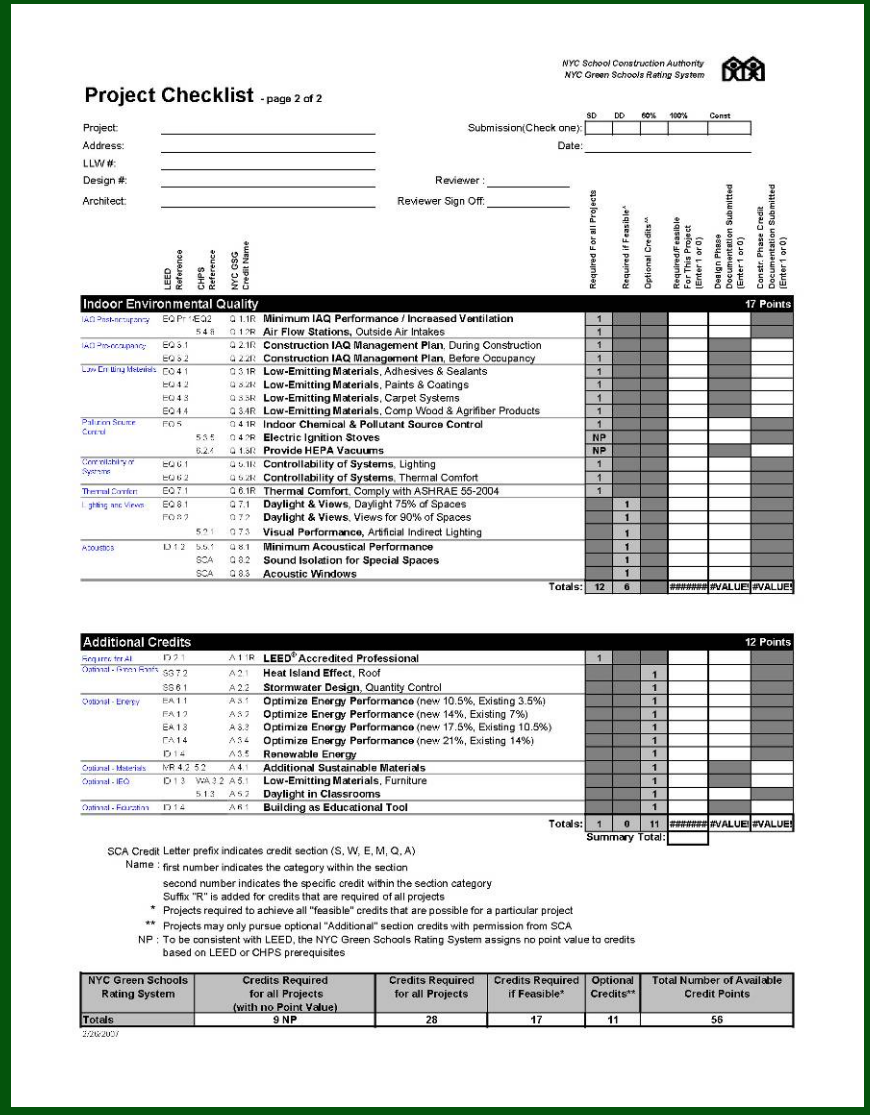
NYC School Construction Authority
NYC Green Schools Rating System

Project Checklist - page 1 of 2

Project: _____ Submission(Check one): SD | DD | 60% | 100% | Const
Address: _____ Date: _____
LLW #: _____
Design #: _____ Reviewer: _____
Architect: _____ Reviewer Sign Off: _____

	LEED Reference	CHPS Reference	NYC GSG Credit Name		Required For all Projects	Required If Feasible*	Optional Credits**	Required/Feasible For This Project (Enter 1 or 0)	Design Phase Documentation Submitted (Enter 1 or 0)	Constr. Phase Credit Documentation Submitted (Enter 1 or 0)
Site										**10 Points**
Site Selection	SS P-1		S-1.1R	**Construction Activity Pollution Prevention**	NP					
	SS 1		S-1.2R	**Site Selection**	1					
		1.1-7	S-1.3	**Sustainable Site & Building Layout**		1				
	SS 2		S-1.4	**Development Density & Community Connectivity**		1				
		1.1-2	S-1.5R	**Joint Use of Facilities,** Community Access	NP					
	SS 3		S-1.6	**Brownfield Redevelopment**		1				
Transportation	SS 4.1		S-2.1	**Alternative Transportation,** Public Transportation Access		1				
	SS 4.3/SS 4.4		S-2.2R	**Alternative Transportation,** Fuel-Efficient Vehicles/Parking	1					
	SS 5.1		S-3.1	**Site Development,** Protect or Restore Habitat		1				
Minimize Impact on Site	SS 5.2		S-3.2	**Site Development,** Maximize Open Space		1				
Stormwater Design	SS 6.2		S-4.1	**Stormwater Design,** Quality Control		1				
Outdoor Lighting	SS 8		S-8.1R	**Light Pollution Reduction**	1					
				Totals:	3	7		########	#VALUE!	#VALUE!
Water										**5 Points**
Outdoor Systems	WE 1.1		W-1.1R	**Water Efficient Landscaping,** Reduce by 50%	1					
	WE 1.2		W-1.2R	**Water Efficient Landscaping,** No Potable Use or No Irrigation	1					
Indoor Systems	WE 3.1		W-2.1R	**Water Use Reduction,** 20% Reduction	1					
	WE 3.2		W-2.2R	**Water Use Reduction,** 30% Reduction	1					
	ID 1.1		W-2.3R	**Water Use Reduction,** 40% Reduction	1					
				Totals:	5	0		########	#VALUE!	#VALUE!
Energy										**3 Points**
Commissioning	EA P-1/EA 3		E-1.1R	**Enhanced Commissioning**	1					
	EA P-3/EA 4		E-1.2R	**Refrigerant Management**	1					
Verification	EA 5		E-2.1R	**Measurement & Verification**	1					
		3.2-5	E-2.2?	**Energy Management System Controls,** HVAC and Hot Water	NP					
Energy Efficiency	EA P-2		E-3.1R	**Minimum Energy Performance**	NP					
HVAC Commissioning		3.1-2	E-4.1R	**HVAC System Sizing,** Avoid Oversizing	NP					
				Totals:	3	0		########	#VALUE!	#VALUE!
Materials										**8 Points**
Efficient Material Use	MR P-1		M-1.1R	**Storage & Collection of Recyclables**	NP					
	MR 1.1		M-1.2	**Building Reuse,** Maintain 75% of Existing Walls, Floors & Roof		1				
	MR 1.2		M-1.3	**Building Reuse,** Maintain 95% of Existing Walls, Floors & Roof		1				
	MR 1.3		M-1.4	**Building Reuse,** Maintain 50% of Interior Non-Structural Elements		1				
	MR 2.1		M-1.5R	**Construction Waste Management,** Divert 50% from Disposal	1					
	MR 2.2		M-1.6	**Construction Waste Management,** Divert 75% from Disposal		1				
Sustainable Materials	MR 4.1		M-2.1R	**Recycled Content,** 10% (post-consumer + ½ pre-consumer)	1					
	MR 5.1		M-2.2R	**Regional Materials,** 10% Extracted, Processed & Manuf. Regionally	1					
		4.1	M-2.3R	**Wallboard & Roof Deck Products,** Mold Resistance	NP					
		7.2-3	M-2.4R	**Low-Mercury Lighting,** Reduce Mercury Waste	1					
				Totals:	4	4		########	#VALUE!	#VALUE!

2/26/2007



NYC School Construction Authority
NYC Green Schools Rating System

Project Checklist - page 2 of 2

Project: _____ Submission(Check one): SD | DD | 60% | 100% | Const
Address: _____ Date: _____
LLW #: _____
Design #: _____ Reviewer: _____
Architect: _____ Reviewer Sign Off: _____

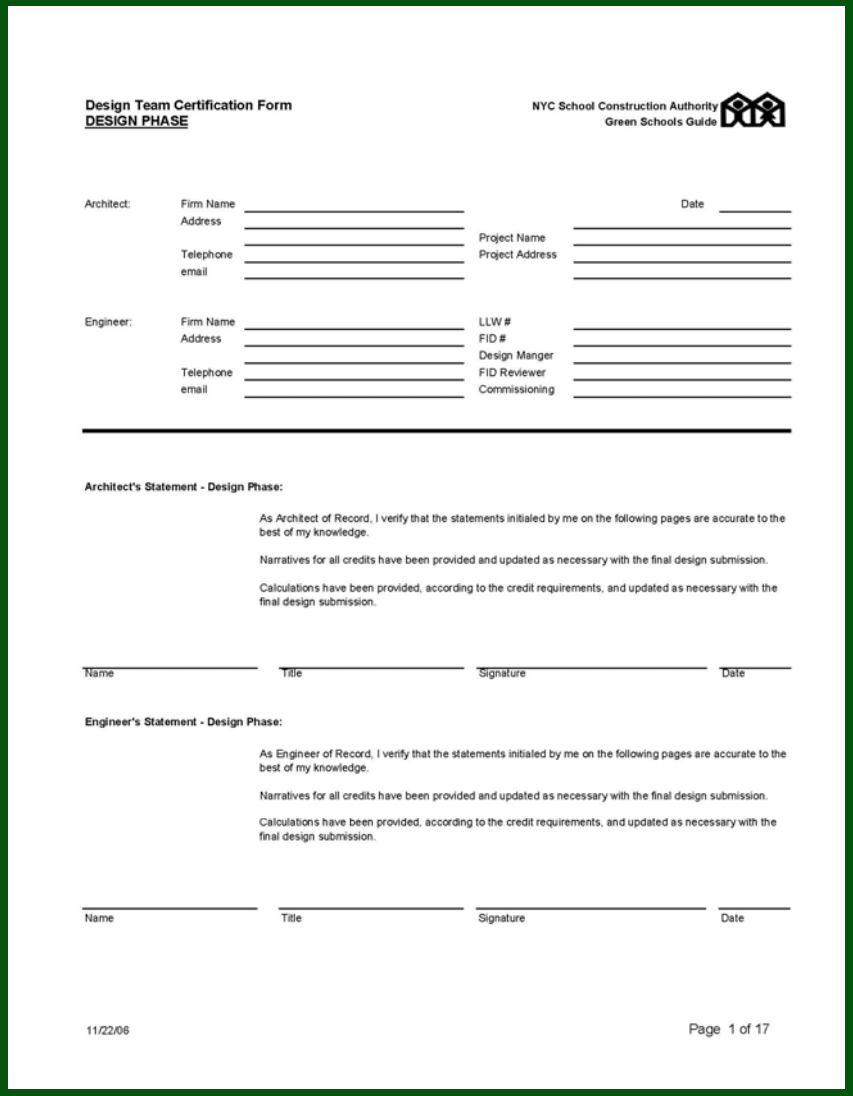
	LEED Reference	CHPS Reference	NYC GSG Credit Name		Required For all Projects	Required If Feasible*	Optional Credits**	Required/Feasible For This Project (Enter 1 or 0)	Design Phase Documentation Submitted (Enter 1 or 0)	Constr. Phase Credit Documentation Submitted (Enter 1 or 0)
Indoor Environmental Quality										**17 Points**
IAQ Prerequisite	EQ Pr-1	EQ2	Q-1.1R	**Minimum IAQ Performance / Increased Ventilation**	1					
		5.4-6	Q-1.2R	**Air Flow Stations,** Outside Air Intakes	1					
IAQ Pre-occupancy	EQ 3.1		Q-2.1R	**Construction IAQ Management Plan,** During Construction	1					
	EQ 3.2		Q-2.2R	**Construction IAQ Management Plan,** Before Occupancy	1					
Low-Emitting Materials	EQ 4.1		Q-3.1R	**Low-Emitting Materials,** Adhesives & Sealants	1					
	EQ 4.2		Q-3.2R	**Low-Emitting Materials,** Paints & Coatings	1					
	EQ 4.3		Q-3.3R	**Low-Emitting Materials,** Carpet Systems	1					
	EQ 4.4		Q-3.4R	**Low-Emitting Materials,** Comp Wood & Agrifiber Products	1					
Pollutant Source Control	EQ 5		Q-4.1R	**Indoor Chemical & Pollutant Source Control**	1					
		5.3-5	Q-4.2R	**Electric Ignition Stoves**	NP					
		6.2-4	Q-4.3R	**Provide HEPA Vacuums**	NP					
Controllability of Systems	EQ 6.1		Q-5.1R	**Controllability of Systems,** Lighting	1					
	EQ 6.2		Q-5.2R	**Controllability of Systems,** Thermal Comfort	1					
Thermal Comfort	EQ 7.1		Q-6.1R	**Thermal Comfort,** Comply with ASHRAE 55-2004	1					
Lighting and Views	EQ 8.1		Q-7.1	**Daylight & Views,** Daylight 75% of Spaces		1				
	EQ 8.2		Q-7.2	**Daylight & Views,** Views for 90% of Spaces		1				
		5.2-1	Q-7.3	**Visual Performance,** Artificial Indirect Lighting		1				
Acoustics	ID 1.2	5.5-1	Q-8.1	**Minimum Acoustical Performance**		1				
		SCA	Q-8.2	**Sound Isolation for Special Spaces**		1				
		SCA	Q-8.3	**Acoustic Windows**		1				
				Totals:	12	6		########	#VALUE!	#VALUE!
Additional Credits										**12 Points**
Requirement	ID 2.1		A-1.1R	**LEED® Accredited Professional**	1					
Optional - Heat Island	SS 7.2		A-2.1	**Heat Island Effect,** Roof			1			
	SS 6.1		A-2.2	**Stormwater Design,** Quantity Control			1			
Optional - Energy	EA 1.1		A-3.1	**Optimize Energy Performance** (new 10.5%, Existing 3.5%)			1			
	EA 1.2		A-3.2	**Optimize Energy Performance** (new 14%, Existing 7%)			1			
	EA 1.3		A-3.3	**Optimize Energy Performance** (new 17.5%, Existing 10.5%)			1			
	EA 1.4		A-3.4	**Optimize Energy Performance** (new 21%, Existing 14%)			1			
	ID 1.4		A-3.5	**Renewable Energy**			1			
Optional - Materials	MR 4.2	5.2	A-4.1	**Additional Sustainable Materials**			1			
Optional - IEQ	ID 1.3	WA 3.2	A-5.1	**Low-Emitting Materials,** Furniture			1			
		5.1-3	A-5.2	**Daylight in Classrooms**			1			
Optional - Education	ID 1.4		A-6.1	**Building as Educational Tool**			1			
				Totals:	1	0	11	########	#VALUE!	#VALUE!
				Summary Total:						

SCA Credit Name: Letter prefix indicates credit section (S, W, E, M, Q, A)
first number indicates the category within the section
second number indicates the specific credit within the section category
Suffix "R" is added for credits that are required of all projects
* Projects required to achieve all "feasible" credits that are possible for a particular project
** Projects may only pursue optional "Additional" section credits with permission from SCA
NP : To be consistent with LEED, the NYC Green Schools Rating System assigns no point value to credits based on LEED or CHPS prerequisites

NYC Green Schools Rating System	Credits Required for all Projects (with no Point Value)	Credits Required for all Projects	Credits Required if Feasible*	Optional Credits**	Total Number of Available Credit Points
Totals	9 NP	28	17	11	56

2/26/2007

Design Phase Certification Form



Design Team Certification Form
DESIGN PHASE

NYC School Construction Authority
Green Schools Guide

Architect: Firm Name _____ Date _____
Address _____
Telephone _____ Project Name _____
email _____ Project Address _____

Engineer: Firm Name _____ LLW # _____
Address _____ FID # _____
Design Manger _____
Telephone _____ FID Reviewer _____
email _____ Commissioning _____

Architect's Statement - Design Phase:

As Architect of Record, I verify that the statements initialed by me on the following pages are accurate to the best of my knowledge.

Narratives for all credits have been provided and updated as necessary with the final design submission.

Calculations have been provided, according to the credit requirements, and updated as necessary with the final design submission.

Name _____ Title _____ Signature _____ Date _____

Engineer's Statement - Design Phase:

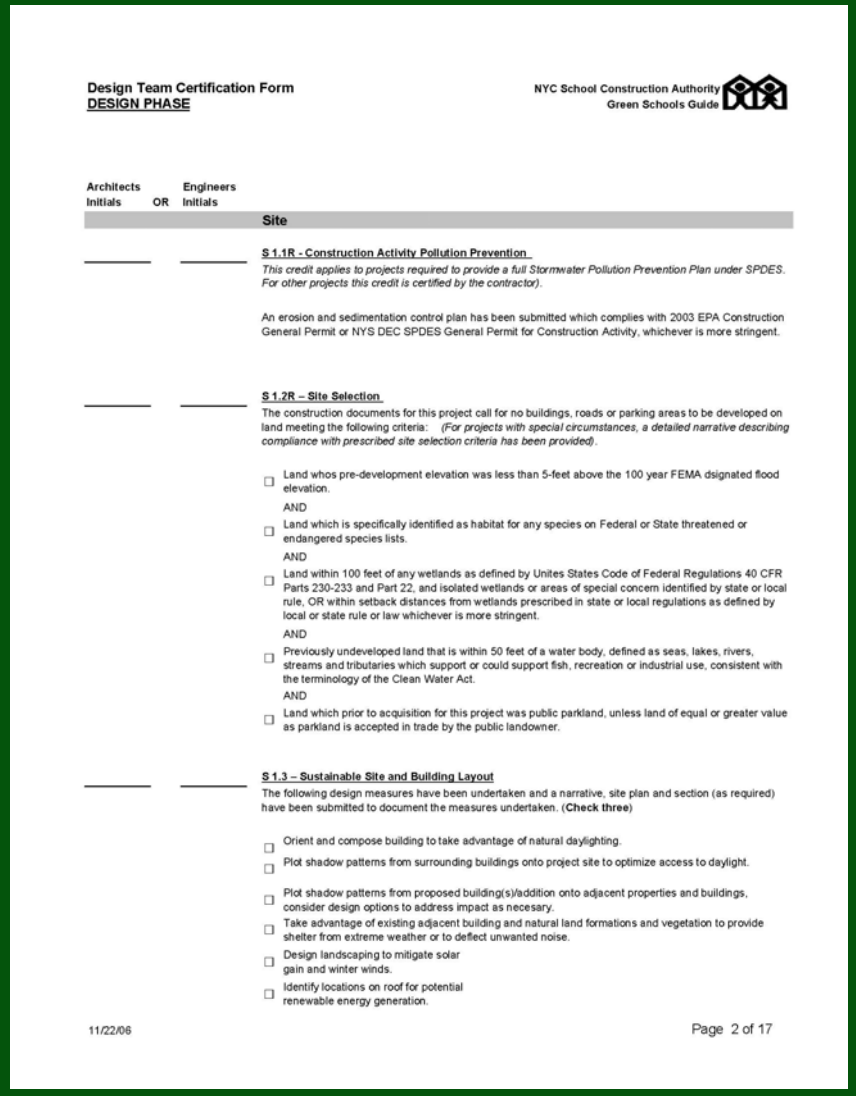
As Engineer of Record, I verify that the statements initialed by me on the following pages are accurate to the best of my knowledge.

Narratives for all credits have been provided and updated as necessary with the final design submission.

Calculations have been provided, according to the credit requirements, and updated as necessary with the final design submission.

Name _____ Title _____ Signature _____ Date _____

11/22/06 Page 1 of 17



Design Team Certification Form
DESIGN PHASE

NYC School Construction Authority
Green Schools Guide

Architects Initials	OR	Engineers Initials	
			Site
_____		_____	**S 1.1R - Construction Activity Pollution Prevention** *This credit applies to projects required to provide a full Stormwater Pollution Prevention Plan under SPDES. For other projects this credit is certified by the contractor).* An erosion and sedimentation control plan has been submitted which complies with 2003 EPA Construction General Permit or NYS DEC SPDES General Permit for Construction Activity, whichever is more stringent.
_____		_____	**S 1.2R – Site Selection** The construction documents for this project call for no buildings, roads or parking areas to be developed on land meeting the following criteria: *(For projects with special circumstances, a detailed narrative describing compliance with prescribed site selection criteria has been provided).* ☐ Land whos pre-development elevation was less than 5-feet above the 100 year FEMA dsignated flood elevation. AND ☐ Land which is specifically identified as habitat for any species on Federal or State threatened or endangered species lists. AND ☐ Land within 100 feet of any wetlands as defined by Unites States Code of Federal Regulations 40 CFR Parts 230-233 and Part 22, and isolated wetlands or areas of special concern identified by state or local rule, OR within setback distances from wetlands prescribed in state or local regulations as defined by local or state rule or law whichever is more stringent. AND ☐ Previously undeveloped land that is within 50 feet of a water body, defined as seas, lakes, rivers, streams and tributaries which support or could support fish, recreation or industrial use, consistent with the terminology of the Clean Water Act. AND ☐ Land which prior to acquisition for this project was public parkland, unless land of equal or greater value as parkland is accepted in trade by the public landowner.
_____		_____	**S 1.3 – Sustainable Site and Building Layout** The following design measures have been undertaken and a narrative, site plan and section (as required) have been submitted to document the measures undertaken. **(Check three)** ☐ Orient and compose building to take advantage of natural daylighting. ☐ Plot shadow patterns from surrounding buildings onto project site to optimize access to daylight. ☐ Plot shadow patterns from proposed building(s)/addition onto adjacent properties and buildings, consider design options to address impact as necesary. ☐ Take advantage of existing adjacent building and natural land formations and vegetation to provide shelter from extreme weather or to deflect unwanted noise. ☐ Design landscaping to mitigate solar gain and winter winds. ☐ Identify locations on roof for potential renewable energy generation.

11/22/06 Page 2 of 17

Contractors Certification Form

Contractor's Certification Form
CONSTRUCTION PHASE

NYC School Construction Authority
Green Schools Guide

Contractor
Firm Name _____ Date _____
Address _____
Telephone _____ Project Name _____
email _____ Project Address _____

Contractor's Statement

I verify that the sustainable requirements summarized below have been achieved.

Name _____ Title _____ Signature _____ Date _____

Contractor's Initials

Site

_____ **S 1.1R - Construction Activity Pollution Prevention**

(For projects where specifications indicate that an erosion and sedimentation control plan is to be provided by contractor)

An erosion and sedimentation control plan has been submitted complying with NYS DEC SPDES General Permit for Construction Activity, including measures from NYS DEC Standards and Specifications for Erosion and Sediment Control. In accordance with the division 2 specification sections.

Materials

_____ **M 1.5R – Construction Waste Management 50%**

The project implements a waste management plan that diverts 50% of the construction waste away from landfills and incinerators. *A Construction Waste Management Plan and calculation tables have been* submitted as documentation in accordance with specification section 01524.

_____ **M 1.6R – Construction Waste Management 75%**

The project implements a waste management plan that diverts 75% of the construction waste away from landfills and incinerators. A Construction Waste Management Plan and calculation tables have been submitted as documentation in accordance with specification section 01524.

Contractor's Certification Form
CONSTRUCTION PHASE

NYC School Construction Authority
Green Schools Guide

Indoor Environmental Quality

_____ **Q2.1R - Construction IAQ Management Plan, During Construction**

An Indoor Air Quality (IAQ) Management Plan for construction was developed and implemented for this project. A copy of the plan has been submitted as documentation in accordance with specification section 01730.

☐ If air handling units were used during construction (prior to testing and balancing) the chart below has been completed for filtration media used during construction.

Merv Rating	Filter Manufacturer	Filter Model #	Location of Installed Filter	Filter Replaced immediately prior to Occupancy (YES or NO)

☐ I have provided a narrative describing the five Design Approaches of SMACNA IAQ Guideline for Occupied Buildings under Construction, 1995, Chapter 3, which were used during the building construction.

OR

☐ I have provided labelled photos showing the SMACNA IAQ practices used as documentation.

_____ **Q2.2R - Construction IAQ, Management Plan, Before Occupancy**

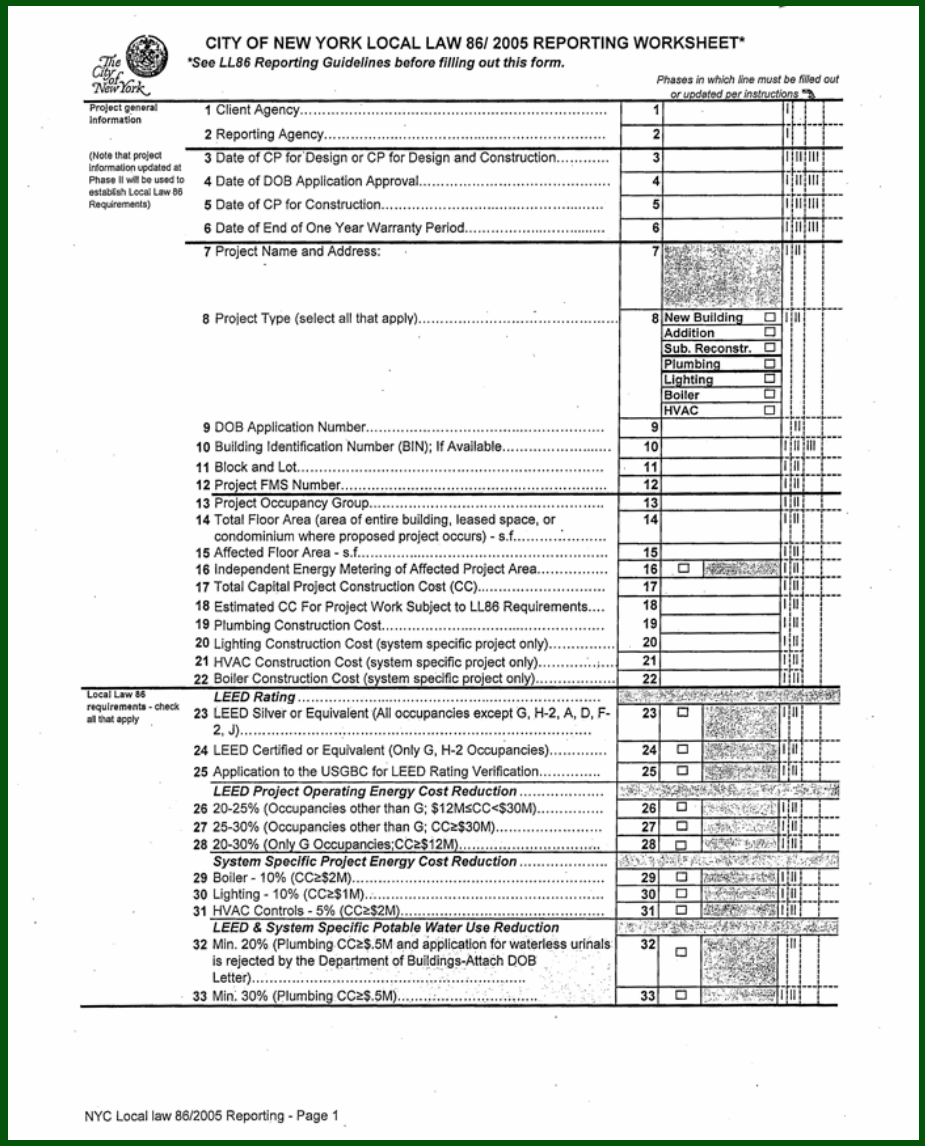
A building flush-out was carried out per the specification requirements in specification section 01730.

☐ I have provided a narrative describing the project's specific flush-out procedures including data regarding temperature, airflow, filters used during flush-out and duration of the flush out.

AND

☐ I have provided a construction schedule showing building flush-out as documentation.

Local Law 86/05 Reporting Worksheet



CITY OF NEW YORK LOCAL LAW 86/ 2005 REPORTING WORKSHEET*

**See LL86 Reporting Guidelines before filling out this form.*

			Phases in which line must be filled out or updated per instructions **
Project general information	1 Client Agency	1	
	2 Reporting Agency	2	
(Note that project information updated at Phase II will be used to establish Local Law 86 Requirements)	3 Date of CP for Design or CP for Design and Construction	3	
	4 Date of DOB Application Approval	4	
	5 Date of CP for Construction	5	
	6 Date of End of One Year Warranty Period	6	
	7 Project Name and Address:	7	
	8 Project Type (select all that apply)	8	New Building ☐ Addition ☐ Sub. Reconstr. ☐ Plumbing ☐ Lighting ☐ Boiler ☐ HVAC ☐
	9 DOB Application Number	9	
	10 Building Identification Number (BIN); If Available	10	
	11 Block and Lot	11	
	12 Project FMS Number	12	
	13 Project Occupancy Group	13	
	14 Total Floor Area (area of entire building, leased space, or condominium where proposed project occurs) - s.f.	14	
	15 Affected Floor Area - s.f.	15	
	16 Independent Energy Metering of Affected Project Area	16	☐
	17 Total Capital Project Construction Cost (CC)	17	
	18 Estimated CC For Project Work Subject to LL86 Requirements	18	
	19 Plumbing Construction Cost	19	
	20 Lighting Construction Cost (system specific project only)	20	
	21 HVAC Construction Cost (system specific project only)	21	
	22 Boiler Construction Cost (system specific project only)	22	
Local Law 86 requirements - check all that apply	***LEED Rating***		
	23 LEED Silver or Equivalent (All occupancies except G, H-2, A, D, F-2, J)	23	☐
	24 LEED Certified or Equivalent (Only G, H-2 Occupancies)	24	☐
	25 Application to the USGBC for LEED Rating Verification	25	☐
	LEED Project Operating Energy Cost Reduction		
	26 20-25% (Occupancies other than G; $12M≤CC<$30M)	26	☐
	27 25-30% (Occupancies other than G; CC≥$30M)	27	☐
	28 20-30% (Only G Occupancies;CC≥$12M)	28	☐
	System Specific Project Energy Cost Reduction		
	29 Boiler - 10% (CC≥$2M)	29	☐
	30 Lighting - 10% (CC≥$1M)	30	☐
	31 HVAC Controls - 5% (CC≥$2M)	31	☐
	LEED & System Specific Potable Water Use Reduction		
	32 Min. 20% (Plumbing CC≥$.5M and application for waterless urinals is rejected by the Department of Buildings-Attach DOB Letter)	32	☐
	33 Min. 30% (Plumbing CC≥$.5M)	33	☐

NYC Local law 86/2005 Reporting - Page 1

SCA/DOE Total Building Commissioning Process

- **Composition of Total Building Commissioning – TEAM EFFORT**
- **SCA TBC Unit - Supplemented by professional services of other established units: DSF; A&E; PM; FID; controlled inspection & testing consultants.**
- **Commissioning Plan – tailored for each project. Requirements presented in:**

  Total Building Commissioning (TBC) Document Verification Matrix

- **Scope of SCA Total Building Commissioning**

  •Design Phase – ensure via Review & Audit DOE/DSF, and Green Schools Guide requirements are achieved.

  •Construction Phase - Review & Audit representative sample of systems submissions & all substitutions ; verify installation and performance of building systems (bldg. envelope, mechanical systems, etc.); maintain reporting processes through the TBC Documentation Verification Matrix

  •Turnover Phase – Review & Audit completed turnover packages for building systems to ensure appropriate documentation, training, O&M Manuals, warranties/guarantees, acceptance sign-offs are presented.

  •Follow-Up Phase – Within 10 months of operation, initiate a joint critical review of building systems' performance and make recommendations to achieve DOE/DSF expectations if systems fail to do so.

NYC Green Schools Guide Rating System

NYC Green Schools Rating System Summary

Site (10 Points)

	LEED Reference	CHPS Reference (or SCA as noted)	SCA Credit Name		Credits With No Points Required for all	Credits With Points Required for all	Required if feasible*	Optional**
Site Selection	SS Pr 1		S 1.1R	**Construction Activity Pollution Prevention**	NP			
	SS 1		S 1.2R	**Site Selection**		1		
		1.1.7	S 1.3	**Sustainable Site & Building Layout**			1	
	SS 2		S 1.4	**Development Density & Community Connectivity**			1	
		1.1.2	S 1.5R	**Joint Use of Facilities,** Community Access	NP			
	SS 3		S 1.6	**Brownfield Redevelopment**			1	
Transportation	SS 4.1		S 2.1	**Alternative Transportation**, Public Transportation Access			1	
	SS 4.3/SS 4.4		S 2.2R	**Alternative Transportation**, Fuel-Efficient Vehicles/Parking		1		
Minimize Impact on Site	SS 5.1		S 3.1	**Site Development**, Protect or Restore Habitat			1	
	SS 5.2		S 3.2	**Site Development**, Maximize Open Space			1	
Stormwater Design	SS 6.2		S 4.1	**Stormwater Design**, Quality Control			1	
Outdoor Lighting	SS 8		S 5.1R	**Light Pollution Reduction**		1		
				Totals for this section:	2NP	3	7	0

Water (5 Points)

Outdoor Systems	WE 1.1		W 1.1R	**Water Efficient Landscaping**, Reduce by 50%		1		
	WE 1.2		W 1.2R	**Water Efficient Landscaping**, No Potable Use or No Irrigation		1		
Indoor Systems	WE 3.1		W 2.1R	**Water Use Reduction,** 20% Reduction		1		
	WE 3.2		W 2.2R	**Water Use Reduction,** 30% Reduction		1		
	ID 1.1		W 2.3R	**Water Use Reduction,** > 40% Reduction		1		
				Totals for this section:	0NP	5	0	0

Energy (3 Points)

Commissioning	EA Pr 1/EA 3		E 1.1R	**Enhanced Commissioning**		1		
	EA Pr 3/EA 4		E 1.2R	**Refrigerant Management**		1		
Verification	EA 5		E 2.1R	**Measurement & Verification**		1		
		3.3.5	E 2.2R	**Energy Management System Controls,** HVAC and Hot Water	NP			
Energy Efficiency	EA Pr 2		E 3.1R	**Minimum Energy Performance**	NP			
HVAC Optimization		3.1.2	E 4.1R	**HVAC System Sizing,** Avoid Oversizing	NP			
				Totals for this section:	3NP	3	0	0

Materials (8 Points)

Efficient Material Use	MR Pr 1		M 1.1R	**Storage & Collection of Recyclables**	NP			
	MR 1.1		M 1.2	**Building Reuse**, Maintain 75% of Existing Walls, Floors & Roof			1	
	MR 1.2		M 1.3	**Building Reuse**, Maintain 95% of Existing Walls, Floors & Roof			1	
	MR 1.3		M 1.4	**Building Reuse**, Maintain 50% of Interior Non-Structural Elements			1	
	MR 2.1		M 1.5R	**Construction Waste Management**, Divert 50% from Disposal		1		
	MR 2.2		M 1.6	**Construction Waste Management**, Divert 75% from Disposal			1	
Sustainable Materials	MR 4.1		M 2.1R	**Recycled Content**, 10% (post-consumer + ½ pre-consumer)		1		
	MR 5.1		M 2.2R	**Regional Materials**, 10% Extracted, Processed & Manuf. Regionally		1		
		4.1.1	M 2.3R	**Wallboard & Roofdeck Products,** Mold Resistance	NP			
		7.2.3	M 2.4R	**Low-Mercury Lighting,** Reduce Mercury Waste		1		
				Totals for this section:	2NP	4	4	0

Indoor Environmental Quality (17 Points)

	LEED Reference	CHPS Reference (or SCA as noted)	SCA Credit Name		Credits With No Points Required for all	Credits With Points Required for all	Required if feasible*	Optional**
IAQ Post-occupancy	EQ Pr 1/EQ2		Q 1.1R	**Minimum IAQ Performance / Increased Ventilation**		1		
		5.4.8	Q 1.2R	**Air Flow Stations,** Outside Air Intakes		1		
IAQ Pre-occupancy	EQ 3.1		Q 2.1R	**Construction IAQ Management Plan**, During Construction		1		
	EQ 3.2		Q 2.2R	**Construction IAQ Management Plan**, Before Occupancy		1		
Low-Emitting Materials	EQ 4.1		Q 3.1R	**Low-Emitting Materials**, Adhesives & Sealants		1		
	EQ 4.2		Q 3.2R	**Low-Emitting Materials**, Paints & Coatings		1		
	EQ 4.3		Q 3.3R	**Low-Emitting Materials**, Carpet Systems		1		
	EQ 4.4		Q 3.4R	**Low-Emitting Materials**, Composite Wood & Agrifiber Products		1		
Pollut. Source Control	EQ 5		Q 4.1R	**Indoor Chemical & Pollutant Source Control**		1		
		5.3.5	Q 4.2R	**Electric Ignition Stoves**	NP			
		6.2.4	Q 4.3R	**Provide HEPA Vacuums**	NP			
Controllability of Syst.	EQ 6.1		Q 5.1R	**Controllability of Systems**, Lighting		1		
	EQ 6.2		Q 5.2R	**Controllability of Systems**, Thermal Comfort		1		
Thermal Comfort	EQ 7.1		Q 6.1R	**Thermal Comfort**, Comply with ASHRAE 55-2004		1		
Lighting	EQ 8.1		Q 7.1	**Daylight & Views**, Daylight 75% of Spaces			1	
	EQ 8.2		Q 7.2	**Daylight & Views**, Views for 90% of Spaces			1	
		5.2.1	Q 7.3	**Visual Performance,** Artificial Indirect Lighting			1	
Acoustics		5.5.1	Q 8.1R	**Minimum Acoustical Performance**			1	
		SCA	Q 8.2	**Sound Isolation for Special Spaces**			1	
		SCA	Q 8.3	**Acoustic Windows**			1	
				Totals for this section:	2NP	12	6	0

Additional Credits (11 Points)

Required for All Projects	ID 2.1		A 1.1R	**LEED® Accredited Professional**		1		
Optional - Green Roofs	SS 7.2		A 2.1	**Heat Island Effect**, Roof				1
	SS 6.1		A 2.2	**Stormwater Design**, Quantity Control				1
Optional - Energy	EA 1.1		A3.1	**Optimize Energy Performance (new 10.5%, Existing 3.5%)**				1
	EA 1.2		A3.2	**Optimize Energy Performance (new 14%, Existing 7%)**				1
	EA 1.3		A3.3	**Optimize Energy Performance (new 17.5%, Existing 10.5%)**				1
	EA 1.4		A3.4	**Optimize Energy Performance (new 21%, Existing 14%)**				1
	ID 1.3		A3.5	**Renewable Energy**				1
Optional - Materials	MR 4.2, 5.2		A 4.1	**Additional Sustainable Materials**				1
Optional - IEQ	ID 1.4	WA 3.2	A 5.1	**Low-Emitting Materials**, Furniture				1
		5.1.3	A 5.2	**Daylight in Classrooms**				1
Optional - Education	ID 1.5		A 6.1	**Building as Educational Tool**				1
				Totals for this section:	0NP	1	0	11

SCA Credit Name: Letter prefix indicates credit section (S, W, E, M, Q, A)
first number indicates the category within the section
second number inicates the specific credit within the section category
Suffix "R" is added for credits that are required of all projects

* Projects required to achieve all "feasible" credits that are possible for a particular project and site.
** Projects may only pursue "optional" (A section) credits with permission from the SCA
NP To be consistent with LEED, the NYC Green Schools Rating System assigns no point value (NP) to credits that are based on LEED or CHPS prerequisites

NYC Green Schools Rating System	Credits Required for all Projects (with no Point Value)	Credits Required for all Projects	Credits Required if Feasible*	Optional Credits**	Total Number of Available Credit Points
Totals	9 NP	28	17	11	56

NYC Green Schools Guide

W2.1-2.3R WATER USE REDUCTION

INTENT

Reduce potable water consumption within school buildings by the use of efficient plumbing fixtures in order to reduce the burden on municipal water supply and wastewater systems.

These credits are required for all projects.

REQUIREMENTS

Credit	Water Use Reduction	Points
W2.1R	20%	1
W2.2R	30%	1
W2.3R	40%	1

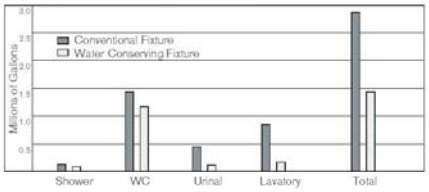
Employ strategies that in aggregate use less water than the water use baseline calculated for the building (not including irrigation) after meeting the Energy Policy Act of 1992 fixture performance requirements. Calculations are based on estimated occupant usage and shall include only the following fixtures: water closets, urinals, lavatory faucets, showers, kitchen and food service area sinks.

The SCA requirement is 40% water use reduction, which achieves credits W.2.1R, W2.2R and W 2.3R.

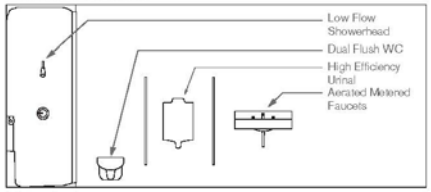
For major school modernizations and renovations of leased building sites there may be atypical projects which, because of their more limited scope, may not achieve 40% water use reduction. For projects where the installation or replacement cost of plumbing fixtures is over $500,000, per LL86/05 these projects must achieve a minimum of 20% water use reduction in aggregate for the facility, or 30% if waterless urinals are approved by the Department of Buildings.

Note that while the text of LL86/05 reference LEED 2.1, the rules for implementing LL86/05 clarify that the current version of LEED should be the reference.

Projected Water Use Reduction for Typical IS/HS



Water Conserving Measures



BEST PRACTICES AND IMPLEMENTATION

The SCA standards require the use of the following water saving fixtures for all projects: aerated metered faucets, dual-flush toilets, low-flow showers and high efficiency urinals. The use of waterless urinals is being reviewed by the SCA and may be incorporated in the future. With either type of urinal, schools will typically achieve 40% water use reduction in combination with the other water saving fixtures in the standard specifications.

For a typical school projects that cannot achieve the 40% energy reduction - but must achieve 20% or 30% required by LL86.05, the most cost effective way to achieve water use reduction is to use water conserving faucets and urinals. Projects where this might apply include major school modernizations and renovations of leased building sites where not all fixtures are to be replaced.

CREDIT SUBMITTALS

DESIGN DEVELOPMENT

ENGINEER'S RESPONSIBILITY

- Submit a narrative summary of the design approach for credit compliance and identifying SCA standards to be incorporated into design documents.

60% CONSTRUCTION DOCUMENTS

ENGINEER'S RESPONSIBILITY

- Submit W2.1 Water Use Reduction Form.
- Incorporate fixtures per standard specifications.

100% CONSTRUCTION DOCUMENTS

ENGINEER'S RESPONSIBILITY

- Submit certification form and updated documentation as necessary.
- Submit LL 86/05 form with water use reduction information.

CONSTRUCTION

No Credit Submittal.

REFERENCES

LEED-NC 2.2 Credit WE 3.1 – Water Use Reduction 20% Reduction
LEED-NC 2.2 Credit WE 3.2 – Water Use Reduction 30% Reduction
LEED-NC 2.2 Credit ID 1.2 – Innovation Credit
Local Law 86/05

SCA DESIGN REQUIREMENTS

6.1.16 Compliance with LL 86/05

SCA STANDARD SPECIFICATIONS

15440 Plumbing Fixtures

SCA STANDARD DETAILS

None

Waterless Urinal

Site Credits

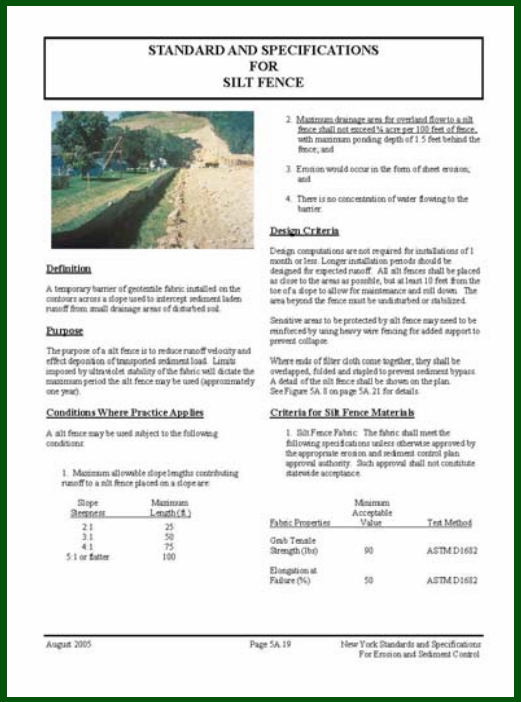
	LEED Reference	CHPS Reference (or SCA as noted)	SCA Credit Name (R=Required)		Credits With No Points Required for all	Credits With Points Required for all	Required if feasible*	Optional**
Site (10 Points)								
Site Selection	SS Pr 1		S 1.1R	**Construction Activity Pollution Prevention**	NP			
	SS 1		S 1.2R	**Site Selection**		1		
		1.1.7	S 1.3	**Sustainable Site & Building Layout**			1	
	SS 2		S 1.4	**Development Density & Community Connectivity**			1	
		1.1.2	S 1.5R	**Joint Use of Facilities,** Community Access	NP			
	SS 3		S 1.6	**Brownfield Redevelopment**			1	
Transportation	SS 4.1		S 2.1	**Alternative Transportation**, Public Transportation Access			1	
	SS 4.3/SS 4.4		S 2.2R	**Alternative Transportation**, Fuel-Efficient Vehicles/Parking		1		
Minimize Impact on Site	SS 5.1		S 3.1	**Site Development**, Protect or Restore Habitat			1	
	SS 5.2		S 3.2	**Site Development**, Maximize Open Space			1	
Stormwater Design	SS 6.2		S 4.1	**Stormwater Design**, Quality Control			1	
Outdoor Lighting	SS 8		S 5.1R	**Light Pollution Reduction**		1		
				Totals for this section:	2NP	3	7	0

Site Credits

S1.1R Construction Activity Pollution Prevention

Reduce pollution from construction activities by controlling soil erosion, waterway sedimentation and airborne dust generation.

Based on a LEED credit.



STANDARD AND SPECIFICATIONS
FOR
SILT FENCE

Definition

A temporary barrier of geotextile fabric installed on the contours across a slope used to intercept sediment laden runoff from small drainage areas of disturbed soil.

Purpose

The purpose of a silt fence is to reduce runoff velocity and effect deposition of transported sediment load. Limits imposed by ultraviolet stability of the fabric will dictate the maximum period the silt fence may be used (approximately one year).

Conditions Where Practice Applies

A silt fence may be used subject to the following conditions:

1. Maximum allowable slope lengths contributing runoff to a silt fence placed on a slope are:

Slope Steepness	Maximum Length (ft.)
2:1	25
3:1	50
4:1	75
5:1 or flatter	100

2. Maximum drainage area for overland flow to a silt fence shall not exceed ¼ acre per 100 feet of fence, with maximum ponding depth of 1.5 feet behind the fence, and
3. Erosion would occur in the form of sheet erosion, and
4. There is no concentration of water flowing to the barrier.

Design Criteria

Design computations are not required for installations of 1 month or less. Longer installation periods should be designed for expected runoff. All silt fences shall be placed as close to the areas as possible, but at least 10 feet from the toe of a slope to allow for maintenance and still down. The area beyond the fence must be undisturbed or stabilized.

Sensitive areas to be protected by silt fence may need to be reinforced by using heavy wire fencing for added support to prevent collapse.

Where ends of filter cloth come together, they shall be overlapped, folded and stapled to prevent sediment bypass. A detail of the silt fence shall be shown on the plan. See Figure 5A.8 on page 5A.21 for details.

Criteria for Silt Fence Materials

1. Silt Fence Fabric: The fabric shall meet the following specifications unless otherwise approved by the appropriate erosion and sediment control plan approval authority. Such approval shall not constitute statewide acceptance.

Fabric Properties	Minimum Acceptable Value	Test Method
Grab Tensile Strength (lbs)	90	ASTM D1682
Elongation at Failure (%)	50	ASTM D1682

August 2005 Page 5A.19 New York Standards and Specifications For Erosion and Sediment Control

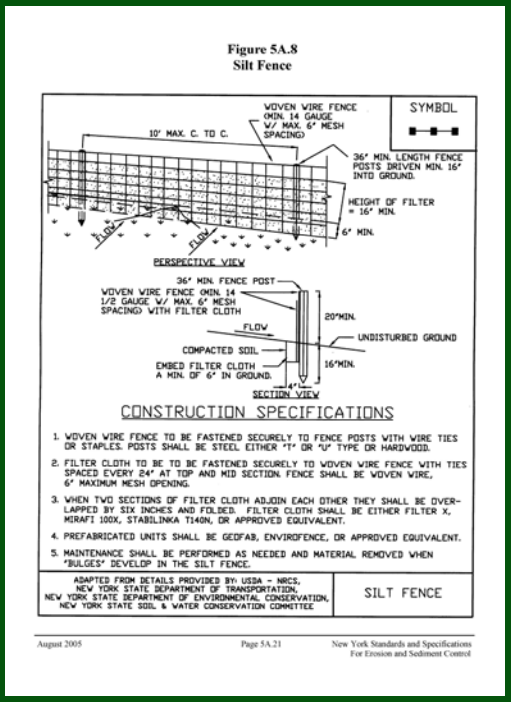


Figure 5A.8
Silt Fence

CONSTRUCTION SPECIFICATIONS

1. WOVEN WIRE FENCE TO BE FASTENED SECURELY TO FENCE POSTS WITH WIRE TIES OR STAPLES. POSTS SHALL BE STEEL EITHER "T" OR "U" TYPE OR HARDWOOD.
2. FILTER CLOTH TO BE TO BE FASTENED SECURELY TO WOVEN WIRE FENCE WITH TIES SPACED EVERY 24" AT TOP AND MID SECTION. FENCE SHALL BE WOVEN WIRE, 6" MAXIMUM MESH OPENING.
3. WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER THEY SHALL BE OVER-LAPPED BY SIX INCHES AND FOLDED. FILTER CLOTH SHALL BE EITHER FILTER X, MIRAFI 100X, STABILINKA T140N, OR APPROVED EQUIVALENT.
4. PREFABRICATED UNITS SHALL BE GEOFAB, ENVIROFENCE, OR APPROVED EQUIVALENT.
5. MAINTENANCE SHALL BE PERFORMED AS NEEDED AND MATERIAL REMOVED WHEN "BULGES" DEVELOP IN THE SILT FENCE.

ADAPTED FROM DETAILS PROVIDED BY: USDA – NRCS, NEW YORK STATE DEPARTMENT OF TRANSPORTATION, NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION, NEW YORK STATE SOIL & WATER CONSERVATION COMMITTEE

SILT FENCE

August 2005 Page 5A.21 New York Standards and Specifications For Erosion and Sediment Control

S1.2R Site Selection

Avoid development of inappropriate sites and reduce the environmental impact from the location of a building on a site.

Based on a LEED credit.

Do not develop on portions of sites that meet any one of the following criteria:

- Previously undeveloped land whose elevation is lower than 5 feet above the elevation of the 100-year flood.
- Land that is specifically identified as habitat for any species on Federal or State threatened or endangered lists.
- Within 100 feet of any wetlands and isolated wetlands or areas of special concern identified by state or local rule, OR within setback distances from wetlands prescribed in state or local regulations, as defined by local or state rule or law, whichever is more stringent.
- Previously undeveloped land that is within 50 feet of a water body, defined as seas, lakes, rivers, streams and tributaries which support or could support fish, recreation or industrial use, consistent with the terminology of the Clean Water Act.
- Land which prior to acquisition for the project was public parkland, unless land of equal or greater value as parkland is accepted in trade by the public landowner.

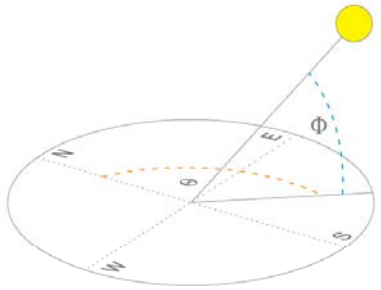
Site Credits

S1.3 Sustainable Site & Building Layout

This credit requires the analysis design factors in the pre-design phase. A through site analysis allows designers to make informed design decisions and to take full advantage of solar orientation.

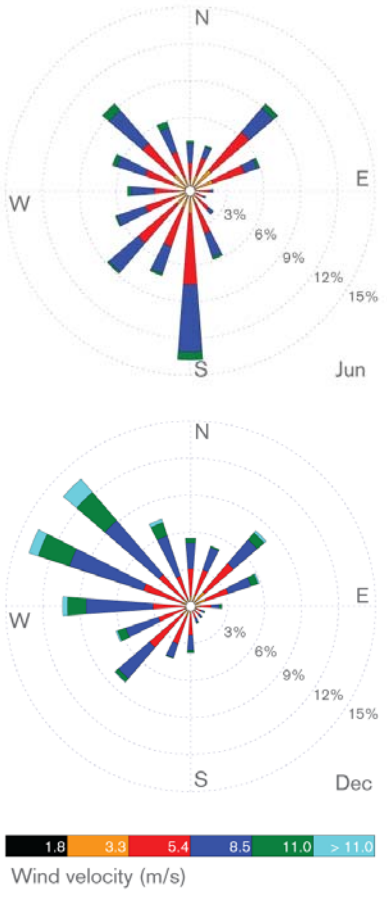
Based on a CHPS credit.

Solar Angle Data for New York City



Date	Altitude (Φ)	Azimuth (Θ)
Jun 21		
9:00	49.2°	101.2°
12:00	72.7°	182.0°
3:00	48.2°	259.9°
Sep 21		
9:00	34.7°	125.3°
12:00	49.8°	184.4°
3:00	31.0°	239.8°
Dec 21		
9:00	14.3°	139.4°
12:00	25.8°	181.6°
3:00	12.7°	223.0°

Windrose Data for New York City

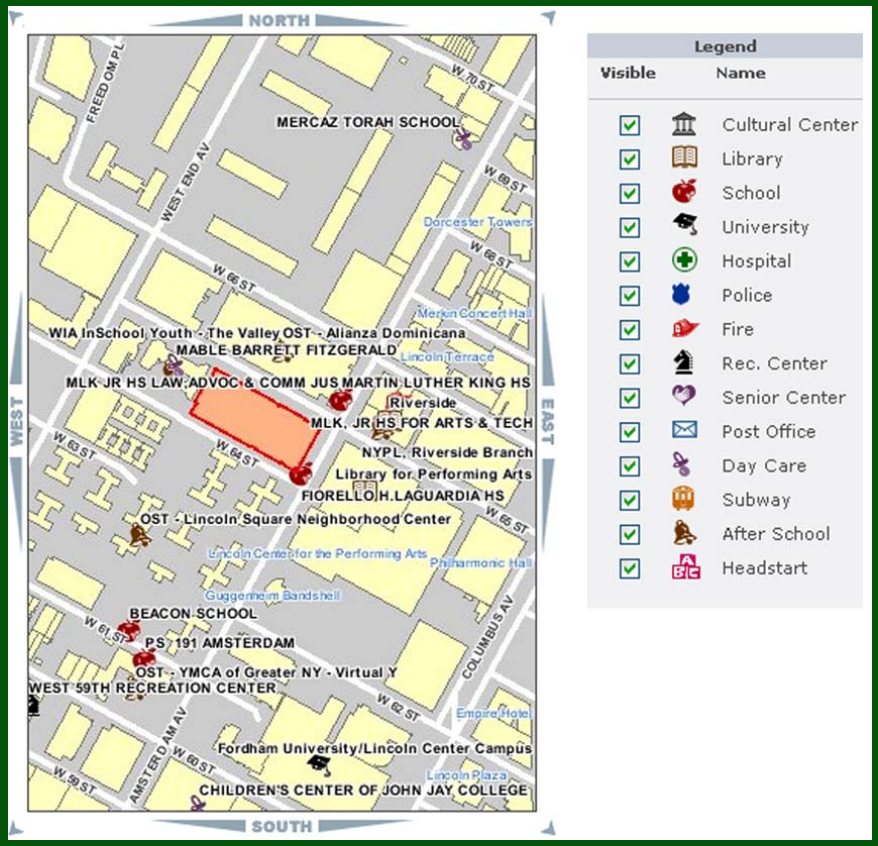


Site Credits

S1.4 Development Density & Community Connectivity

Channel development to urban areas with existing infrastructure, protect green fields and preserve habitat and natural resources.

Based on a LEED credit.



Site Credits

S1.5R Joint Use of Facilities/Community Access

The most successful schools have a high level of parent and community involvement. This involvement can be enhanced if a school is designed so that neighborhood meetings, recreation activities, and other community functions can take place at the school in a safe and secure fashion.

Based on a CHPS credit.

S1.6 Brownfield Development

Rehabilitate damaged site where development is complicated by environmental contamination, reducing pressure on undeveloped land.

Based on a LEED credit.

Site Credits

S2.1 Alternative Transportation / Public Transportation Access

Reduce pollution and land development impacts from automobile use.

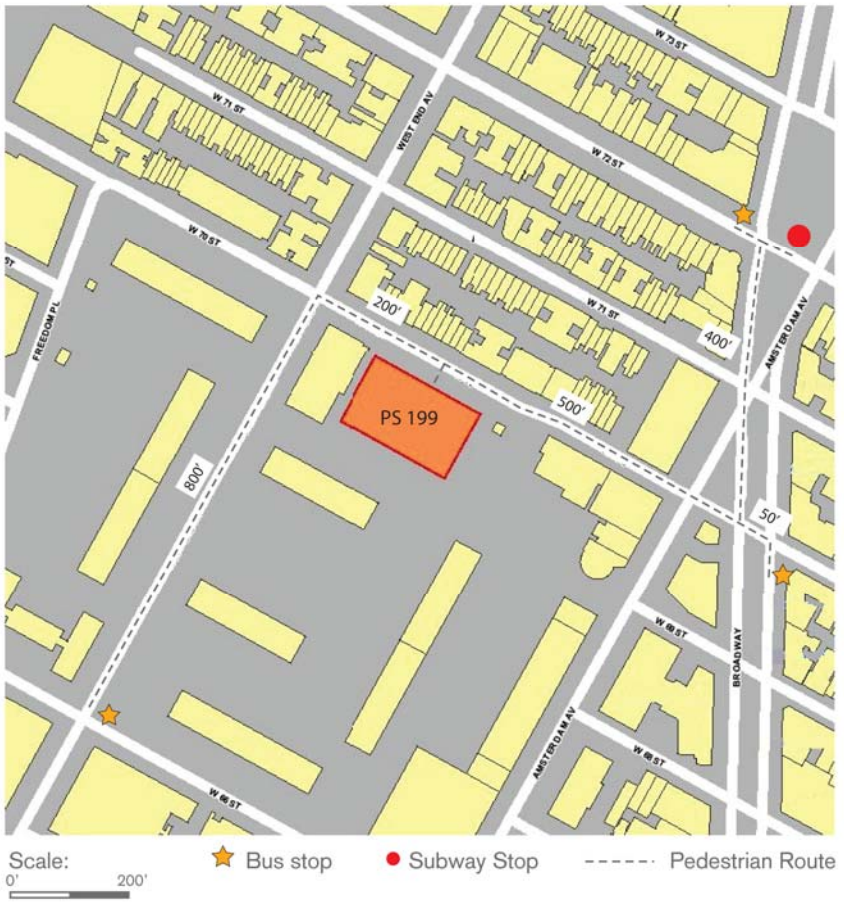
Based on a LEED Credit.

S2.2R Alternative Transportation Low Emitting & Fuel-Efficient Vehicles and Parking Capacity

Reduce pollution and land development impacts from automobiles use.

Based on two LEED credits and a CHPS credit.

Project Vicinity Map Showing All Bus and Subway Stops Within 1/4 Mile of Site



Site Credits

S3.1 Site Development: Protect or Restore Habitat

Conserve existing natural areas and restore damaged areas to provide habitat and promote biodiversity.

Based on a LEED credit.

S3.2 Site Development: Maximize Open Space

Provide a high percentage of open space, vegetated green with adapted or native plants, or pedestrian oriented hardscape.

Based on a LEED credit.

S4.1 Stormwater Design Quality Control

Reduce or eliminate water pollution by reducing impervious cover, increasing on-site infiltration, eliminating sources of contaminants, and removing sedimentation from stormwater runoff.

Based on a LEED credit.

S5.1 Light Pollution Reduction

Minimize light trespass from the building and site, reduce sky-glow to increase night sky access, improve nighttime visibility through glare reduction, and reduce project's impact on nocturnal environments.

Based on a LEED credit.

Water

	LEED Reference	CHPS Reference (or SCA as noted)	SCA Credit Name (R=Required)		Credits With No Points Required for all	Credits With Points Required for all	Required if feasible*	Optional**
Water (5 Points)								
Outdoor Systems	WE 1.1		W 1.1R	**Water Efficient Landscaping**, Reduce by 50%		1		
	WE 1.2		W 1.2R	**Water Efficient Landscaping**, No Potable Use or No Irrigation		1		
Indoor Systems	WE 3.1		W 2.1R	**Water Use Reduction,** 20% Reduction		1		
	WE 3.2		W 2.2R	**Water Use Reduction,** 30% Reduction		1		
	WE 2		W 2.3R	**Water Use Reduction,** > 40% Reduction		1		
				Totals for this section:	0NP	5	0	0

Water Credits

W1.1R Water Efficient Landscaping: Reduce Water Use by 50%

Limit or eliminate the use of potable water for landscape irrigation

W1.2R Water Efficient Landscaping: No Potable Water Use OR No Irrigation

Preferred Option: Perform a soil/climate analysis to determine appropriate plant material and design the landscape with native or adapted plants to eliminate irrigation requirement. Temporary irrigation systems used for plant establishment are allowed only if removed within one year of installation.

OR

On projects, that use irrigation, use only captured rainwater, recycled wastewater, or recycled graywater for landscape irrigation.

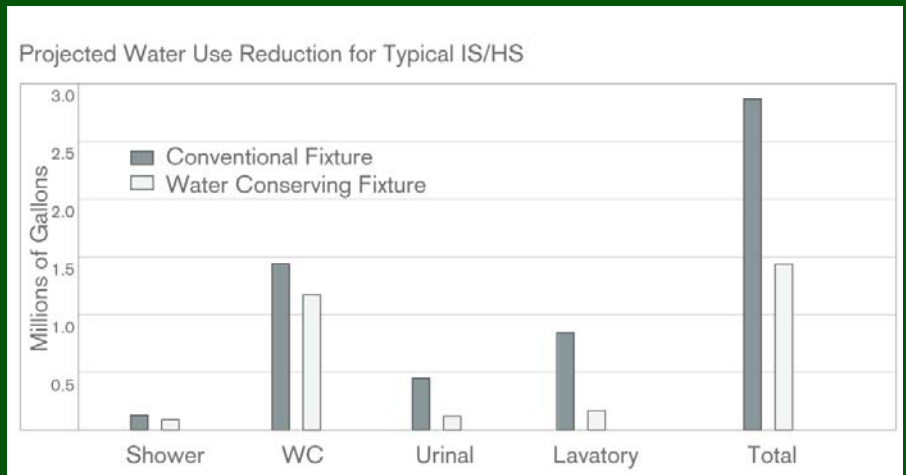
Based on LEED credits.

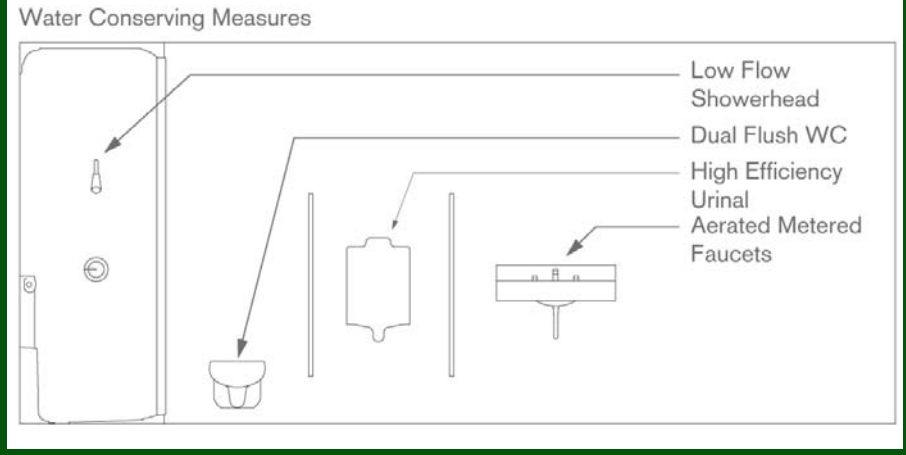
Water Credits

W2.1R Water Use Reduction, 20%
W2.2R Water Use Reduction, 30%
W2.3R Water Use Reduction, 40%

Maximize water efficiency to reduce the burden on municipal water supply and wastewater systems.

Based on LEED credits.





Energy

	LEED Reference	CHPS Reference (or SCA as noted)	SCA Credit Name (R=Required)		Credits With No Points Required for all	Credits With Points Required for all	Required if feasible*	Optional**
Energy (3 Points)								
Commissioning	EA Pr 1/EA 3		E 1.1R	**Enhanced Commissioning**		1		
	EA Pr 3/EA 4		E 1.2R	**Refrigerant Management**		1		
Verification	EA 5		E 2.1R	**Measurement & Verification**		1		
		3.3.5	E 2.2R	**Energy Management System Controls,** HVAC and Hot Water	NP			
Energy Efficiency	EA Pr 2		E 3.1R	**Minimum Energy Performance**	NP			
HVAC Optimization		3.1.2	E 4.1R	**HVAC System Sizing,** Avoid Oversizing	NP			
				Totals for this section:	3NP	3	0	0

E1.1R Enhanced Commissioning

Commissioning ensures that all the building systems are designed, installed, calibrated, functionally tested, and are capable of being operated and maintained to perform in conformity with the owner's project requirements, basis of design and construction documents.

Based on a LEED credit

The benefits of the added over-site provided by commissioning include:

- Reduced energy use.
- Reduced contractor post-construction involvement.
- Lower operating costs.
- Better building system documentation.
- Reduced disturbance to building occupants for repairs and maintenance.
- Verification of training for building systems.
- Improved occupant productivity through greater comfort.

Energy Credits

E1.2R Refrigerant Management

Reduce ozone depletion.

Based on a LEED credit.

REFRIGERANT IMPACT FORM
Credit E1.2R

NYC School Construction Authority
NYC Green Schools Rating System

Project: _____ Engineering Firm: _____
Address: _____ Preparer: _____
LLW: _____ Date: _____ Telephone: _____

The matrix below is to assist in calculating the refrigerant impact using the following calculation: **LCGWP + LCODP x 100,000 is less than or equal to 100**

Weighted average for multiple pieces of **[Σ (LCGWP + LCODP x 100,000) x Qunit] / Qtotal is less than or equal to 100**

Inputs - Enter Specific project information in shaded cells below										Calculations					
Description HVAC&R equipment	N No. of Units	Q unit (Tons)	Refrig-erant	GWPr	ODPr	Rc (lb/ ton)	Life (yrs)	Lr (%)	Mr (%)	Q total	Tr (Lr x Life +Mr)	LCGWP	LCODP x 100000	LCGWP+ LCODPx 100000	(LCGWP + LCODP x 100000) x Qtotal
	12	5	R410a	1,890	0	1.8	15	2.0%	10.0%	60	40%	90.7	0	90.7	5443
	12	1	R410a	1,890	0	1.8	15	2.0%	10.0%	12	40%	90.7	0	90.7	1089
	1	1	R410a	1,890	0	1.8	15	2.0%	10.0%	1	40%	90.7	0	90.7	91
	1	1	R410a	1,890	0	1.8	15	2.0%	10.0%	1	40%	90.7	0	90.7	91
	6	1	R22	1,780	0.04	3.3	15	2.0%	10.0%	6	40%	156.6	35.2	191.8	1151
	1	1	R22	1,780	0.04	2.1	10	2.0%	10.0%	1	30%	112.1	25.2	137.3	137
										81				Subtotal =	8002
														Weighted Average Atmospheric Impact [Σ (LCGWP + LCODP x 100,000) x Qunit] / Qtotal =	98.8

Definitions:

LCGWP: Lifecycle Direct Global Warming Potential (lbCFC11.Ton-Year) = [GWPr x (Lr x life + Mr) x Rc]/life
LCODP: Lifecycle Ozone Depletion Potential (lbCFC11.Ton-Year) = [ODPr x (Lr x life + Mr) x Rc]/life
GWPr: Global Warming Potential of Refrigerant (0 to 12,000 lbCO2/lbr). See on following page.
ODPr: Ozone Depletion Potential of Refrigerant (0 to .2lbCFC11/lbr). See on following page.
Q unit: Cooling capacity of an individual HVAC or refrigeration unit in tons.
Rc: Refrigerant Charge (0.5 to 5.0 lbs of refrigerant per ton of cooling capacity)
Life: Equipment Life (based on equipment type, 10 years unless otherwise demonstrated)
Lr: Refrigerant Leakage Rate (0.5% to 2%; default of 2% unless otherwise demonstrated)
Mr: End-of-life Refrigerant Loss (2% to 10%; default of 10% unless otherwise demonstrated)
Q total: Total cooling capacity for a given type of HVAC or refrigeration unit on the project.

Ozone-depletion and global-warming potentials of refrigerants (100-yr values)

Refrigerant		ODP	GWP	Common Building Application
Chlorofluorocarbons	CFC-11	1.0	4,680	Centrifugal chillers
	CFC-12	1.0	10,720	Refrigerators, chillers
	CFC-114	0.94	9,800	Centrifugal chillers
	CFC-500	0.605	7,900	Centrifugal chillers, humidifiers
	CFC-502	0.221	4,600	Low-temperature refrigeration
Hydrochloroflurocarbons	HCFC-22	0.04	1,780	Air conditioning, chillers,
	HCFC-123	0.02	76	CFC-11 replacement
Hydrofluorocarbons	HFC-23	~0	12,240	Ultra-low-temperature refrigeration
	HFC-134a	~0	1,320	CFC-12 or HCFC-22 replacement
	HFC-245fa	~0	1,020	Insulation agent, centrifugal chillers
	HFC-404A	~0	3,900	Low-temperature refirifugal chillers
	HFC-407C	~0	1,700	Low-temperature refrigeration
	HFC-410A	~0	1,890	HCFC-22 replacement
	HFC-507A	~0	3,900	Air conditioning
Natural Refrigerants	Carbon Dioxide (CO2	0	1.0	
	Ammonia (NH3)	0	0	
	Propane	0	3	

Default Maximum Allowable Equipment Refrigerant Charge (1b/ton)

Refrigerant	10 Year Life (Room or Window AC & Heat Pumps)	15 Year Life (Unitary, split and packaged AC and heat pumps)	20 Year Life (Reciprocating compressors & chillers)	23 Year Life (Centrifugal, Screw & Absorption Chillers)
R-22	0.57	0.64	0.69	0.71
R-123	1.60	1.80	1.92	1.97
R-134a	2.52	2.80	3.03	3.10
R-245fa	3.26	3.60	3.92	4.02
R-407c	1.95	2.20	2.35	2.41
R-410a	1.76	1.98	2.11	2.17

11/21/2006

Energy Credits

E2.1R Measurement & Verification

Provide for the ongoing measurement and accountability of building energy consumption over time.
Based on a LEED credit.

E2.2R Energy Management System Controls, HVAC and Hot Water

Provide Building Management Systems (BMS). Care must be taken to specify and install an appropriate system for the school and its maintenance staff.
Based on a CHPS credit.

E3.1R Minimum Energy Performance

Design projects to achieve a minimum established level of energy efficiency for the proposed building when compared to a code compliant building using ASHRAE/IESNA Standard 90.1-2004 as a reference standard. Achieve energy cost reduction of regulated sources (20% minimum) per ASHRAE/IESNA 90.1-1999 per LL86/05.
Based on a LEED credit.

E3.1R Minimum Energy Performance

Energy Conservation Measures Systems Summary

The proposed energy efficiency measures are designed to meet LEED NC 2.2 Minimum Energy Performance guidelines. This system achieves energy efficiency primarily through: (1) hydronic heating of classrooms utilizing gas fired modular condensing boilers (2) improved exterior wall insulation (3) spectrally selective low-E glazing and (4) energy efficient lighting controlled by occupancy sensors.

Assembly spaces have dedicated Roof Top Units to allow independent operation of mechanical systems. Carbon dioxide sensors within assembly areas ensure efficient use of energy systems.

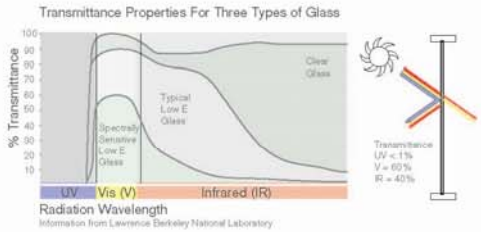
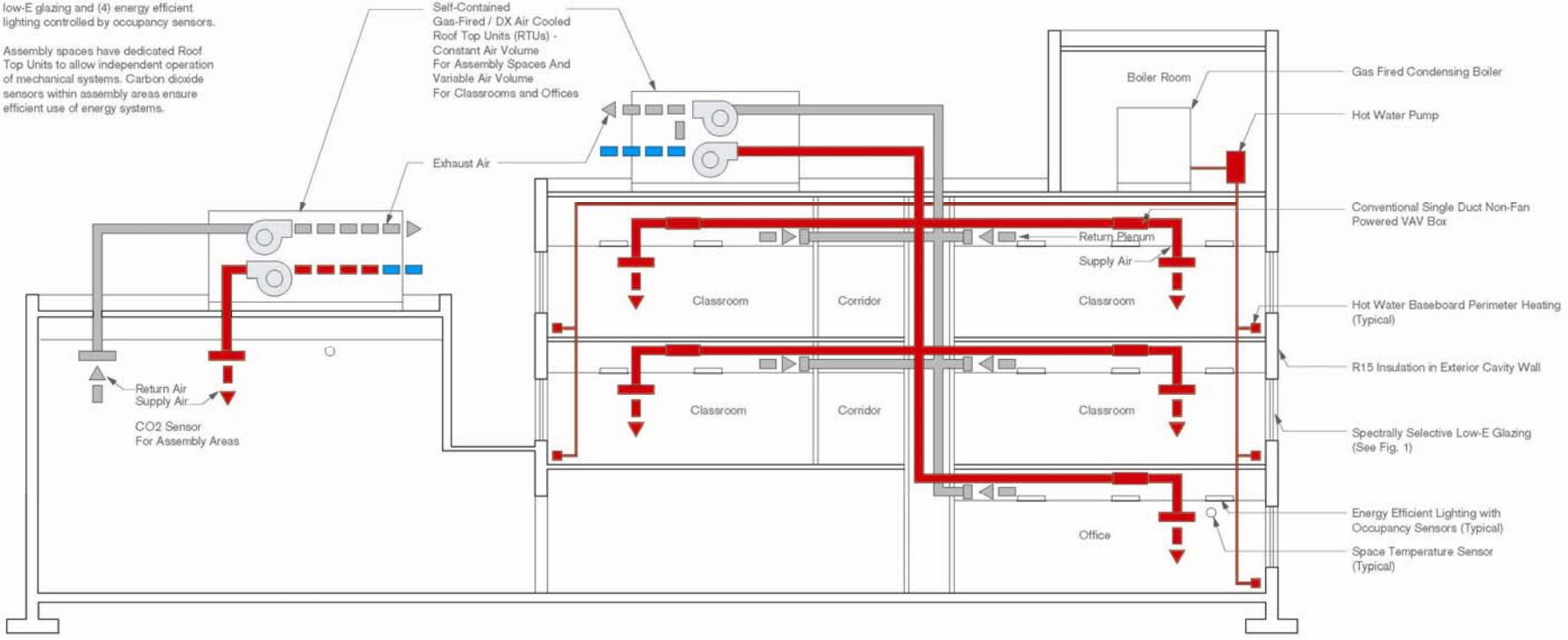


Fig. 1
Laminated spectrally selective low-E coating allows visible daylight and blocks UV transmission while inhibiting infrared light. Graph on left compares light transmission through clear, low-E, and spectrally selective low-E glazing



E4.1R HVAC System Sizing, Avoid Oversizing

Design all major HVAC components such that they are correctly matched to loads to preclude unnecessary oversizing and ensure energy efficient operation.

Based on a CHPS credit.

Materials

	LEED Reference	CHPS Reference (or SCA as noted)	SCA Credit Name (R=Required)		Credits With No Points Required for all	Credits With Points Required for all	Required if feasible*	Optional**
Materials (8 Points)								
Efficient Material Use	MR Pr 1		M 1.1R	**Storage & Collection of Recyclables**	NP			
	MR 1.1		M 1.2	**Building Reuse**, Maintain 75% of Existing Walls, Floors & Roof			1	
	MR 1.2		M 1.3	**Building Reuse**, Maintain 95% of Existing Walls, Floors & Roof			1	
	MR 1.3		M 1.4	**Building Reuse**, Maintain 50% of Interior Non-Structural Elements			1	
	MR 2.1		M 1.5R	**Construction Waste Management**, Divert 50% from Disposal		1		
	MR 2.2		M 1.6	**Construction Waste Management**, Divert 75% from Disposal			1	
Sustainable Materials	MR 4.1		M 2.1R	**Recycled Content**, 10% (post-consumer + ½ pre-consumer)		1		
	MR 5.1		M 2.2R	**Regional Materials**, 10% Extracted, Processed & Manuf. Regionally		1		
		4.1.1	M 2.3R	**Wallboard & Roofdeck Products,** Mold Resistance	NP			
		7.2.3	M 2.4R	**Purchase Low-Mercury Lighting,** Reduce Mercury Waste		1		
				Totals for this section:	2NP	4	4	0

Materials Credits

M1.1R Storage & Collection of Recyclables

Reduce the amount of waste to be disposed of in landfills by facilitating recycling.

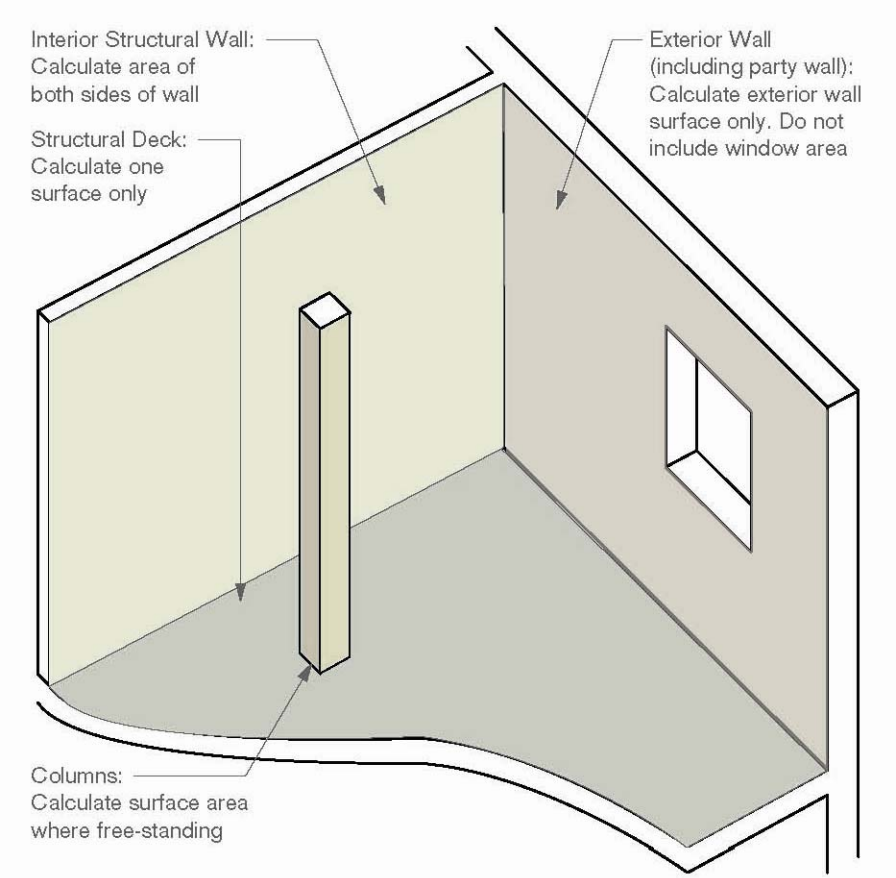
Based on a LEED credit.

Materials Credits

M1.2-1.3 Building Reuse: Existing Walls, Floors & Roof

Extend the life-cycle of existing building structures, conserve material resources, retain cultural resources, reduce waste and the environmental impacts of renovated school buildings as they relate to materials manufacturing and transport.

Based on a LEED credit.



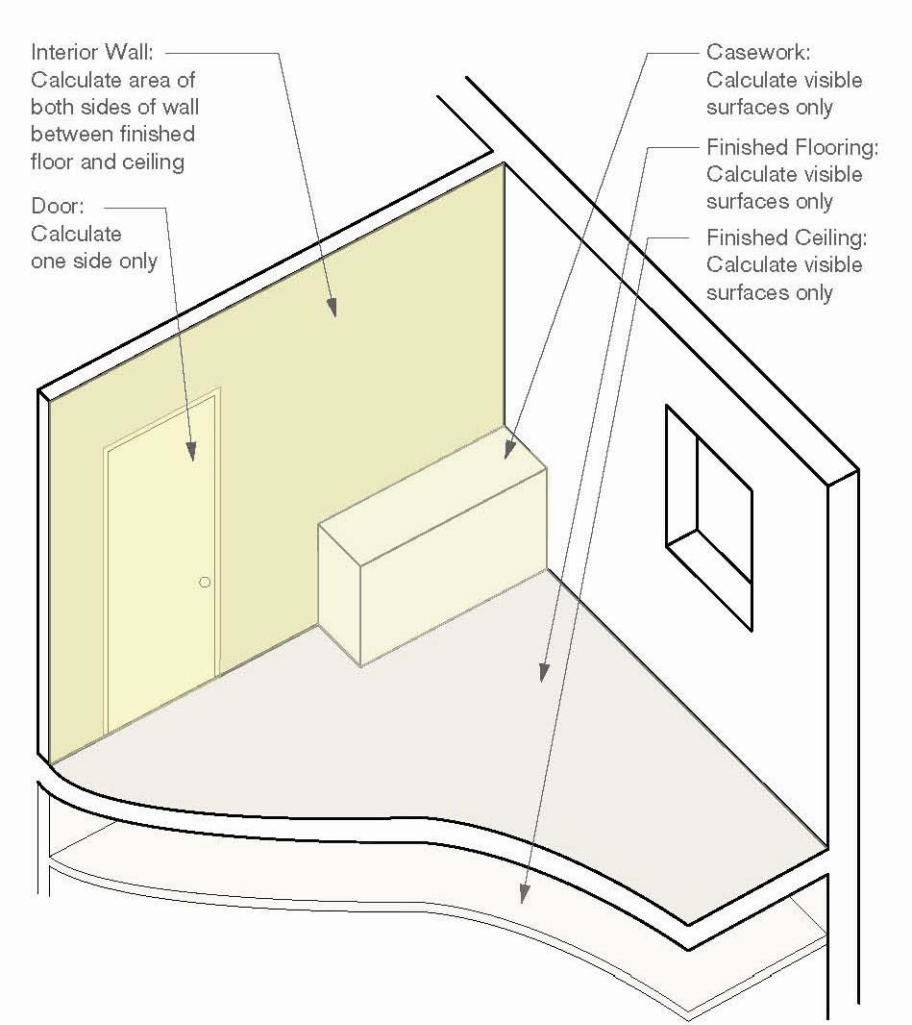
Structure and Envelope To Be Re-used
Surface Area Calculation Method

Materials Credits

M1.4 Building Reuse: Maintain 50% of Interior Non-Structural Elements

Extend the life-cycle of existing building structures, conserve material resources, retain cultural resources, reduce waste and the environmental impacts of renovated school buildings as they relate to materials manufacturing and transport

Based on a LEED credit.



Interior Non-Structural Elements Surface Area Calculation Method

Materials Credits

M1.5R-M1.6 Construction Waste Management

Divert recyclable and reusable construction and demolition debris from disposal in landfills and incinerators. Redirect recyclable recovered resources back to the manufacturing process. Redirect reusable materials to appropriate sites.

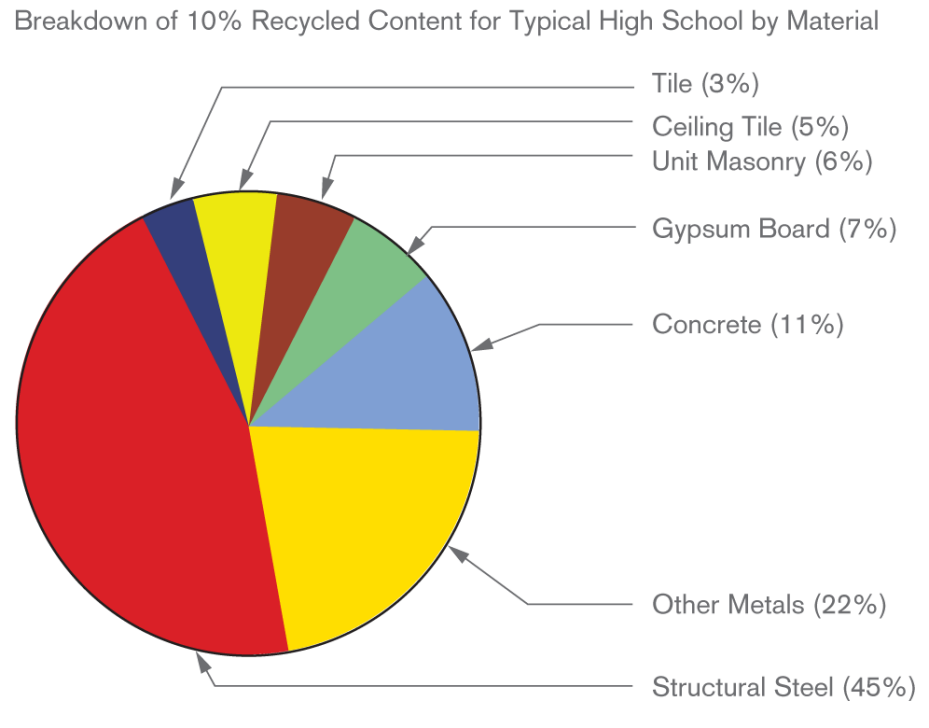
Based on a LEED credit.

Materials Credits

M2.1R Recycled Content, 10% (Post-Consumer + 1/2 Pre-Consumer)

Increase demand for building products that incorporate recycled content materials, thereby reducing impacts resulting from the extraction and processing of virgin materials.

Based on a LEED credit.



Materials Credits

M2.2R Regional Materials, 10% Extracted, Processed & Manufactured Regionally

Increase demand for building materials and products that are extracted and manufactured within the region, thereby supporting the use of indigenous resources and reducing the environmental impacts resulting from transportation.

Based on a LEED credit.

Materials Credits

Contractors Sustainable Materials Form

CONTRACTOR'S SUSTAINABLE MATERIALS FORM
Credit M 2.1 and M 2.2

NYC School Construction Authority
NYC Green Schools Rating System

Project: _____ Contractor: _____

Address: _____ Contractor Contact: _____

LLW: _____ Date: _____ Spec Section: _____ Telephone: _____

Product Name	Manufacturer	Material Cost (no Labor & Equip.)	Recycled Content		Regional*** Materials		
			Percentage **Post** Consumer* by weight	Percentage **Pre**-Consumer** by weight	Percentage Regionally Extracted*** by weight	Distance between project site and extraction site	Distance between project site and manufacture site
		$1,000	1%	1%	1%	miles	miles
						miles	miles
						miles	miles
						miles	miles
						miles	miles
						miles	miles

Definitions:

* **Post-Consumer Recycled Content:** Material or finshed product that has served its intended consumer use and has been discarded by by consumer.

** **Pre-Consumer Recycled Content:** Recovered industrial and manufacturing materials diverted from municipal solid waste for the purpose of collection, recycling and disposition. Examples are fly-ash and synthetic gypsum, because they are waste products from coal burning electricity plants. (Scrap raw materials that can be reused in the same manufacturing process from which they are recovered are not considered Pre-Consumer Recycled Content)

*** **Regional Materials:** Regionally manufactured materials that have their origin within 500 miles of the project site. These would included products that are regionally mined, harvested, salvaged, or re-used (including those salvaged from the site).

Notes:

1. Recycled content for concrete - provide cost for cementitious materials and percentage of cementitious materials that are recycled content.
2. Recycled content for steel products - Where it is not possible to determine recycled content - use default assumption of 25% post consumer recycled content
3. Regional content for concrete - Provide combined cost for all concrete materials, and distance information requested.
4. Regional content - For materials with varyone point of extraction all within the 500-mile radius list a single item with the greatest distance.
5. Provide back-up documentation for information on form above - such as product data or manufacturer's statements.

Contractor Certification:

I, _____ a duly authorized representative of _____ hereby certify that the material information herein is an accurate representation of the material qualifications provided, as components of the final building construction. Furthermore, I understand that any change in such qualifications during the purchasing period will require prior written approval from the Construction Manager and Owner.

Signature of Authorized Representative: _____ Date: _____

10/18/06

Materials Credits

M2.3R Wallboard & Roofdeck Products, Mold Resistance

To incorporate mold resistant wallboard and roof deck products.

Based on a CHPS credit.

M2.4R Purchase Low-Mercury Lighting, Reduce Mercury Waste

Fluorescent and HID lamps contain mercury. When broken, incinerated, or buried in a landfill, they release mercury into the air, water and soil and endanger human health and the environment. Low-mercury, or “green end cap,” lamps do not eliminate the hazardous waste stream but do reduce it considerably.

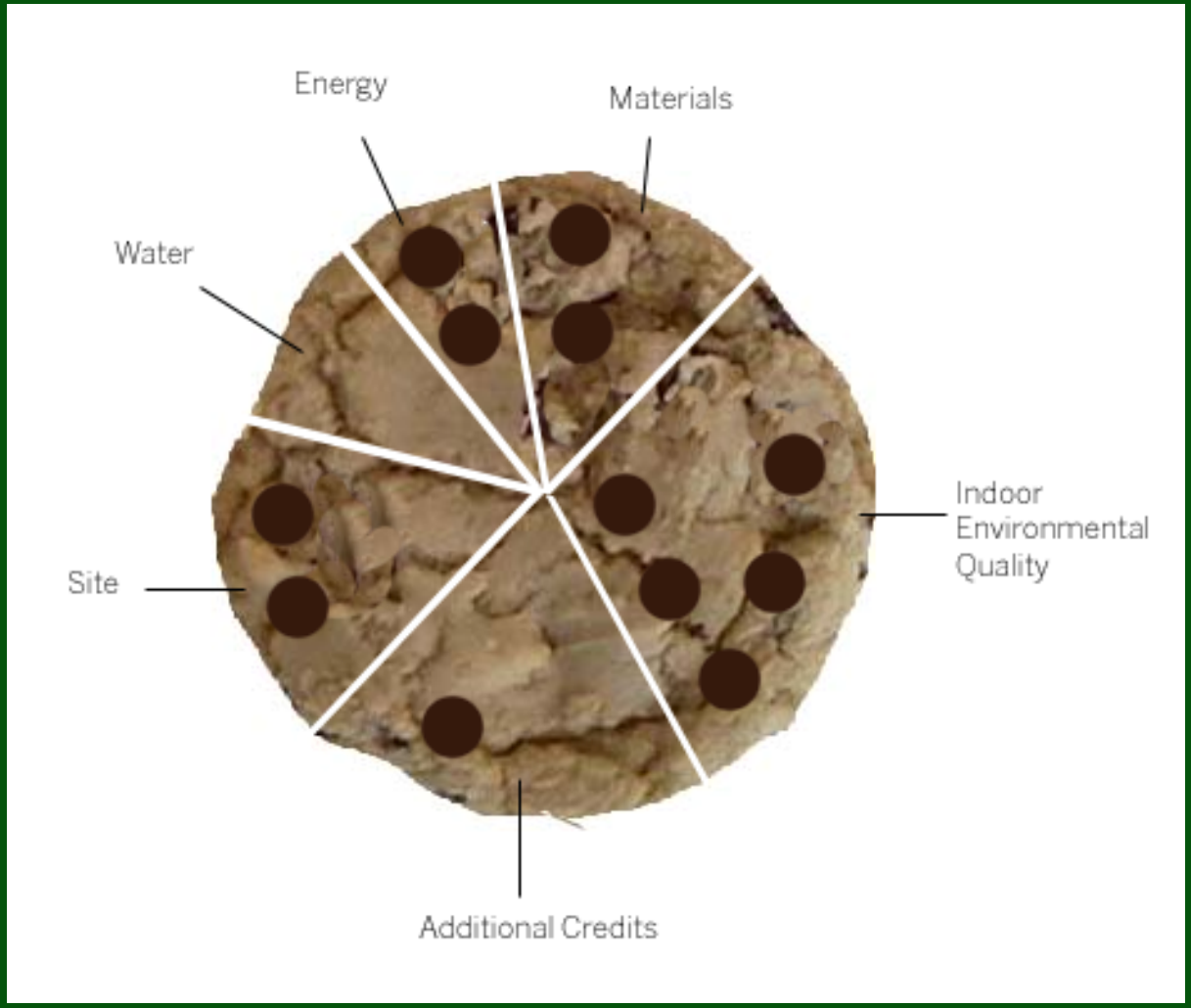
Based on a CHPS credit and a LEED Innovation in Design Credit.

Indoor Environmental Quality

	LEED Reference	CHPS Reference (or SCA as noted)	SCA Credit Name		Credits With No Points Required for all	Credits With Points Required for all	Required if feasible*	Optional**
Indoor Environmental Quality (17 Points)								
IAQ Post-occupancy	EQ Pr 1/EQ2		Q 1.1R	**Minimum IAQ Performance / Increased Ventilation**		1		
		5.4.8	Q 1.2R	**Air Flow Stations,** Outside Air Intakes		1		
IAQ Pre-occupancy	EQ 3.1		Q 2.1R	**Construction IAQ Management Plan**, During Construction		1		
	EQ 3.2		Q 2.2R	**Construction IAQ Management Plan**, Before Occupancy		1		
Low-Emitting Materials	EQ 4.1		Q 3.1R	**Low-Emitting Materials**, Adhesives & Sealants		1		
	EQ 4.2		Q 3.2R	**Low-Emitting Materials**, Paints & Coatings		1		
	EQ 4.3		Q 3.3R	**Low-Emitting Materials**, Carpet Systems		1		
	EQ 4.4		Q 3.4R	**Low-Emitting Materials**, Composite Wood & Agrifiber Products		1		
Pollut. Source Control	EQ 5		Q 4.1R	**Indoor Chemical & Pollutant Source Control**		1		
		5.3.5	Q 4.2R	**Electric Ignition Stoves**	NP			
		6.2.4	Q 4.3R	**Provide HEPA Vacuums**	NP			
Controllability of Syst.	EQ 6.1		Q 5.1R	**Controllability of Systems**, Lighting		1		
	EQ 6.2		Q 5.2R	**Controllability of Systems**, Thermal Comfort		1		
Thermal Comfort	EQ 7.1		Q 6.1R	**Thermal Comfort**, Comply with ASHRAE 55-2004		1		
Lighting	EQ 8.1		Q 7.1	**Daylight & Views**, Daylight 75% of Spaces			1	
	EQ 8.2		Q 7.2	**Daylight & Views**, Views for 90% of Spaces			1	
		5.2.1	Q 7.3	**Visual Performance,** Artificial Indirect Lighting			1	
Acoustics		5.5.1	Q 8.1R	**Minimum Acoustical Performance**			1	
		SCA	Q 8.2	**Sound Isolation for Special Spaces**			1	
		SCA	Q 8.3	**Acoustic Windows**			1	
				Totals for this section:	2NP	12	6	0

Indoor Environmental Quality Credits

CHPS Credits incorporated by Guide Section



Indoor Environmental Quality Credits

Q1.1R Minimum IAQ Performance / Increased Ventilation

Establish minimum indoor air quality (IAQ) performance to enhance indoor environment in buildings, thus contributing to the comfort and well-being of occupants. Provide additional outdoor air ventilation to improve the indoor air quality.

Based on LEED credits.

Q1.2R Air Flow Stations, Outside Air Intakes

Monitor and collect data at all outdoor air intakes to ensure that indoor air quality meets established standards.

Based on a CHPS credit.

Indoor Environmental Quality Credits

Q2.1R Construction IAQ Management Plan, During Construction

Reduce indoor air quality problems resulting from the construction process in order to help sustain the comfort and well-being of construction workers and building occupants.

Based on a LEED credit.

Q2.2R Construction IAQ Management Plan, Before Occupancy

Reduce indoor air quality problems resulting from the construction process in order to help sustain the comfort and well-being of building occupants.

Based on a LEED credit.

Indoor Environmental Quality Credits

Q3.1R Low-Emitting Materials, Adhesives & Sealants

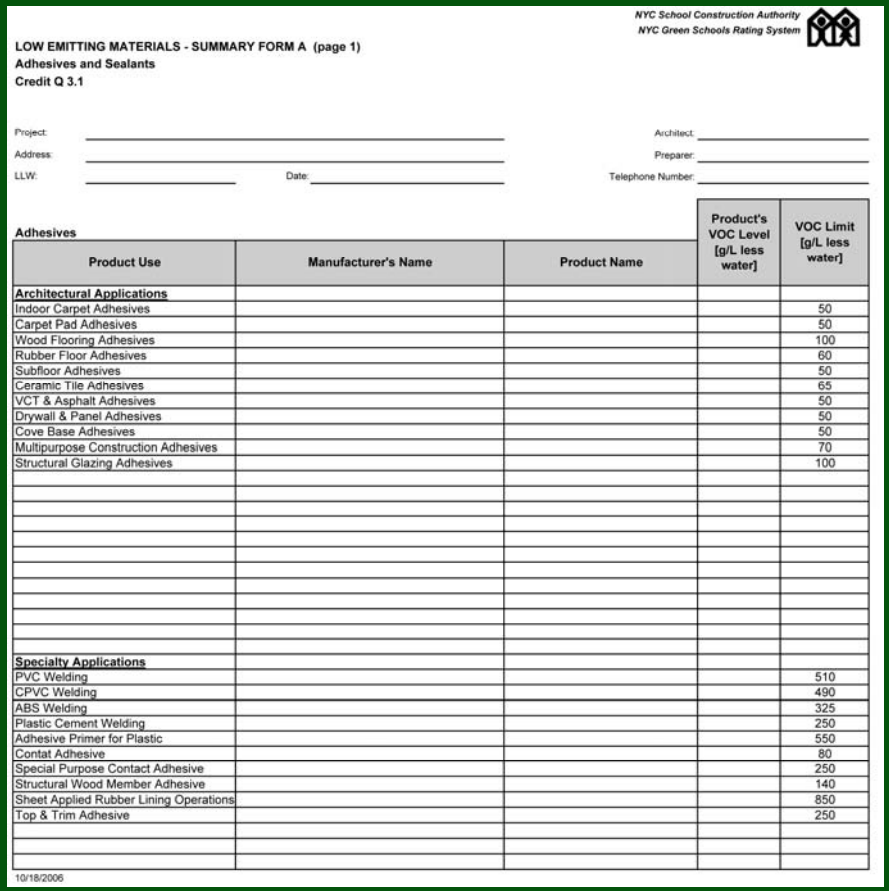
Q3.2R Low-Emitting Materials, Paints & Coatings

Q.3.3R Low-Emitting Materials, Carpet Systems

Q3.4R Low-Emitting Materials, Composite Wood & Agrifiber Products

Reduce the quantity of indoor air contaminants that are odorous, irritating and/or harmful to the comfort and well being of installers and occupants.

Based on a LEED credits.



NYC School Construction Authority
NYC Green Schools Rating System

LOW EMITTING MATERIALS - SUMMARY FORM A (page 1)
Adhesives and Sealants
Credit Q 3.1

Project: _____ Architect: _____
Address: _____ Preparer: _____
LLW: _____ Date: _____ Telephone Number: _____

Adhesives

Product Use	Manufacturer's Name	Product Name	Product's VOC Level [g/L less water]	VOC Limit [g/L less water]
Architectural Applications				
Indoor Carpet Adhesives				50
Carpet Pad Adhesives				50
Wood Flooring Adhesives				100
Rubber Floor Adhesives				60
Subfloor Adhesives				50
Ceramic Tile Adhesives				65
VCT & Asphalt Adhesives				50
Drywall & Panel Adhesives				50
Cove Base Adhesives				50
Multipurpose Construction Adhesives				70
Structural Glazing Adhesives				100
Specialty Applications				
PVC Welding				510
CPVC Welding				490
ABS Welding				325
Plastic Cement Welding				250
Adhesive Primer for Plastic				550
Contat Adhesive				80
Special Purpose Contact Adhesive				250
Structural Wood Member Adhesive				140
Sheet Applied Rubber Lining Operations				850
Top & Trim Adhesive				250

10/18/2006

Indoor Environmental Quality Credits

Low Emitting Materials Standards

Interior Paints and Coatings Standards Summary

Architectural Paints, Coatings and Primers applied to Interior Walls and Ceilings	
GS-11	
Green Seal Standard	
Paints, 1st Edition, 5/20/1993	
Anti-Corrosive and Anti-Rust Paints applied to Interior Ferrous Metal Substrates	VOC Limit (g/L less water)
GC-03	250
Green Seal Standard	
Anti-Corrosive Paints,	
2nd Edition, 1/7/1997	
Clear Wood Finishes, Floor Coatings, Stains, Sealers, and Shellacs applied to Interior Elements	
SCAQMD Rule 1113	
South Coast Air Quality Management	
District, Architectural Coatings,	
1/1/2004	

SCAQMD VOC Limits - 1/7/05

Architectural Applications	VOC Limit (g/L less water)
Indoor Carpet Adhesives	50
Carpet Pad Adhesives	50
Wood Flooring Adhesives	100
Rubber Floor Adhesives	60
Subfloor Adhesives	50
Ceramic Tile Adhesives	65
VCT & Asphalt Adhesives	50
Drywall & Panel Adhesives	50
Cove Base Adhesives	50
Multipurpose Construction Adhesives	70
Structural Glazing Adhesives	100

Substrate Specific Applications	VOC Limit (g/L less water)
Metal to Metal	30
Plastic Foams	50
Wood	30
Fiberglass	80
Porous Material (except wood)	50

Specialty Applications	VOC Limit (g/L less water)
PVC Welding	519
CPVC Welding	490
ABS Welding	325
Plastic Cement Welding	250
Adhesive Primer for Plastic	550
Contact Adhesive	80
Special Purpose Contact Adhesive	250
Structural Wood Member Adhesive	140
Sheet Applied Rubber Lining Operations	850
Top& Trim Adhesive	250

Sealant Applications	VOC Limit (g/L less water)
Architectural	250
Architectural Non Porous	250
Architectural Porous	775
Nonmembrane Roof	300
Roadway	250
Single-Ply Roof Membrane	450
Other	420

Aerosol Adhesives Applications	VOC Limit (g/L less water)
General Purpose Mist Spray	65% VOC's by wt.
General Purpose Web Spray	55% VOC's by wt.
Special Pupose (all types)	70% VOC's by wt.

Indoor Environmental Quality Credits

Q4.1R Indoor Chemical & Pollutant Source Control

Reduce exposure to building occupants to potentially hazardous particulates and chemical pollutants.

Based on a LEED credit.

Q4.2R Electric Ignition Stoves

Avoid accumulation of carbon monoxide from pilot lights that can cause dangerous air quality conditions for staff and students by using electric ignition stoves.

Based on a CHPS credit.

Q4.3R Provide HEPA Vacuums

Reduce indoor airborne dust levels during cleaning activities.

Based on a CHPS credit.

Indoor Environmental Quality Credits

Q5.1R Controllability of Systems, Lighting

Provide a high level of lighting system control by occupants or by specific groups in multi-occupant spaces (i.e., classrooms, cafeterias, auditoriums, gymnasiums, multi-purpose rooms) to promote the productivity, comfort and well being of building occupants.

Q5.2R Controllability of Systems, Thermal Comfort

Provide a thermal comfort control system adjusted by occupants or by specific groups in multi-occupant spaces (i.e., classrooms or conference areas) to promote the productivity, comfort and well-being of building occupants.

Q6.1R Thermal Comfort, Comply With ASHRAE 55-2004

Provide a comfortable thermal environment that supports the productivity and well being of building occupants.

Based on LEED credits.

Q7.1 Daylight & Views, Daylight 75% of Spaces

Provide the building occupants a connection between indoor spaces and the outdoors through the introduction of daylight and views into the regularly occupied areas of the building.

Based on a LEED credit.

NYC School Construction Authority
NYC Green Schools Rating System

DAYLIGHT & VIEWS
Credit Q7.1
Daylight Calculation Form

Project: ______________________ Architect: ______________
Address: ______________________ Preparer: ______________
LLW: __________ Date: __________ Telephone: ______________

RM #	RM NAME	OCC AREA		Glazing Area		Window Geometry		Transmittance		Window Height	Daylight Factor		Daylit Area	Glare Control (Y / N)
						Type	Factor	Actual	Min.	Factor	Each	Room		
Floor Level														
#	Room Name	1,000	SF	50	SF	VIS	0.10	0.62	0.40	0.80	0.62	1.2	1000	
			SF	50	SF	DAY	0.10	0.62	0.70	1.40	0.62			
#	Room Name	1,000	SF	50	SF	VIS	0.10	0.62	0.40	0.80	0.62	1.2	1000	
			SF	50	SF	DAY	0.10	0.62	0.70	1.40	0.62			
#	Room Name	1,000	SF	50	SF	VIS	0.10	0.62	0.40	0.80	0.62	3.8	1000	
			SF	50	SF	DAY	0.10	0.62	0.70	1.40	0.62			
	skylight		SF	50	SF	DAY	0.33	0.62	0.40	1.00	2.56			
	Sub-Total This Floor	**3,000**												
Floor Level														
#	Room Name	1,000	SF	50	SF	VIS	0.10	0.62	0.40	0.80	0.62	1.2	1000	
			SF	50	SF	DAY	0.10	0.62	0.70	1.40	0.62			
#	Room Name	1,000	SF	50	SF	VIS	0.10	0.62	0.40	0.80	0.62	1.2	1000	
			SF	50	SF	DAY	0.10	0.62	0.70	1.40	0.62			
#	Room Name	1,000	SF	50	SF	VIS	0.10	0.62	0.40	0.80	0.62	3.8	1000	
			SF	50	SF	DAY	0.10	0.62	0.70	1.40	0.62			
	skylight		SF	50	SF	DAY	0.33	0.62	0.40	1.00	2.56			
	Sub-Total This Floor	**3,000**												
Floor Level														
#	Room Name	1,000	SF	50	SF	VIS	0.10	0.62	0.40	0.80	0.62	1.2	1000	
			SF	50	SF	DAY	0.10	0.62	0.70	1.40	0.62			
#	Room Name	1,000	SF	50	SF	VIS	0.10	0.62	0.40	0.80	0.62	1.2	1000	
			SF	50	SF	DAY	0.10	0.62	0.70	1.40	0.62			
#	Room Name	1,000	SF	50	SF	VIS	0.10	0.62	0.40	0.80	0.62	3.8	1000	
			SF	50	SF	DAY	0.10	0.62	0.70	1.40	0.62			
	skylight		SF	50	SF	DAY	0.33	0.62	0.40	1.00	2.56			
	Sub-Total This Floor	**3,000**												
Floor Level														
#	Room Name	1,000	SF	50	SF	VIS	0.10	0.62	0.40	0.80	0.62	1.2	1000	
			SF	50	SF	DAY	0.10	0.62	0.70	1.40	0.62			
#	Room Name	1,000	SF	50	SF	VIS	0.10	0.62	0.40	0.80	0.62	1.2	1000	
			SF	50	SF	DAY	0.10	0.62	0.70	1.40	0.62			
#	Room Name	1,000	SF	50	SF	VIS	0.10	0.62	0.40	0.80	0.62	3.8	1000	
			SF	50	SF	DAY	0.10	0.62	0.70	1.40	0.62			
	skylight		SF	50	SF	DAY	0.33	0.62	0.40	1.00	2.56			
	Sub-Total This Floor	**3,000**												
		12,000											**12,000**	
											Percentage achieved:		**100.0%**	

Requirement to achieve credit Q 7.1 is Daylight in 75% of occupiable project area

Complies? (Y/ N): [ ]

Notes

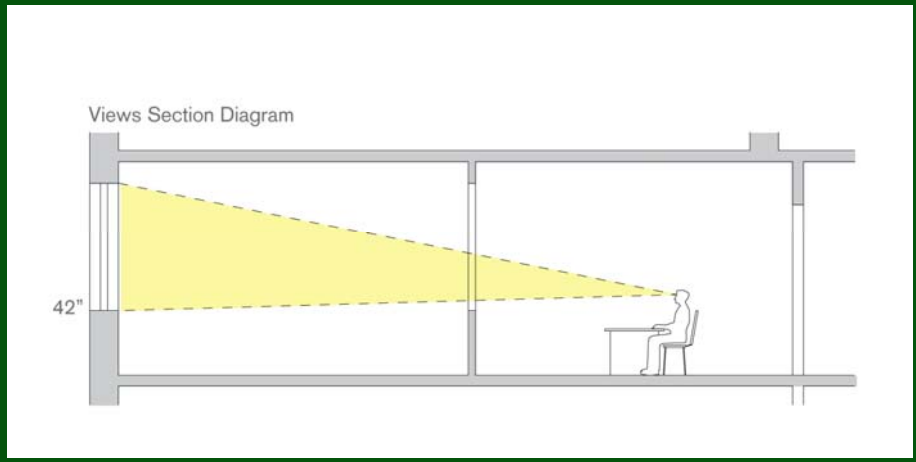
1. In all cases, only the square footage associated with the portions of rooms or spaces meeting the minimum illumination requirements can be applied towards the 75% of total area calculation required to qualify for this credit.
2. In all cases provide daylight redirection and/or glare control devices to avoid high-contrast situations that could impede visual tasks.
3. It is permissible to exclude areas where tasks would be hindered by the use of daylight. Exceptions on this basis might include computer rooms, auditoriums and gyms. In gyms for example, where glare control measures are incorporated (such as glass block) and glazing area is limited, it would be difficult for glazing appropriate to the space to comply with the credit requirements.

Indoor Environmental Quality Credits

Q7.2 Daylight & Views, Views for 90% of Spaces

Provide the building occupants a connection between indoor spaces and the outdoors through the introduction of daylight and views into the regularly occupied areas of the building.

Based on a LEED credit.



Q7.3 Visual Performance, Artificial Indirect Lighting

Glare-free ambient lighting improves the visual environment for students and teachers to read, write, and interact. Pendant-mounted “direct-indirect,” “semi-indirect,” and “totally indirect” luminaires offer low-brightness while providing good definition of objects in the teaching space. The luminance of these lamps is enhanced by white or light colored ceilings, which reflect the light down into the learning space.

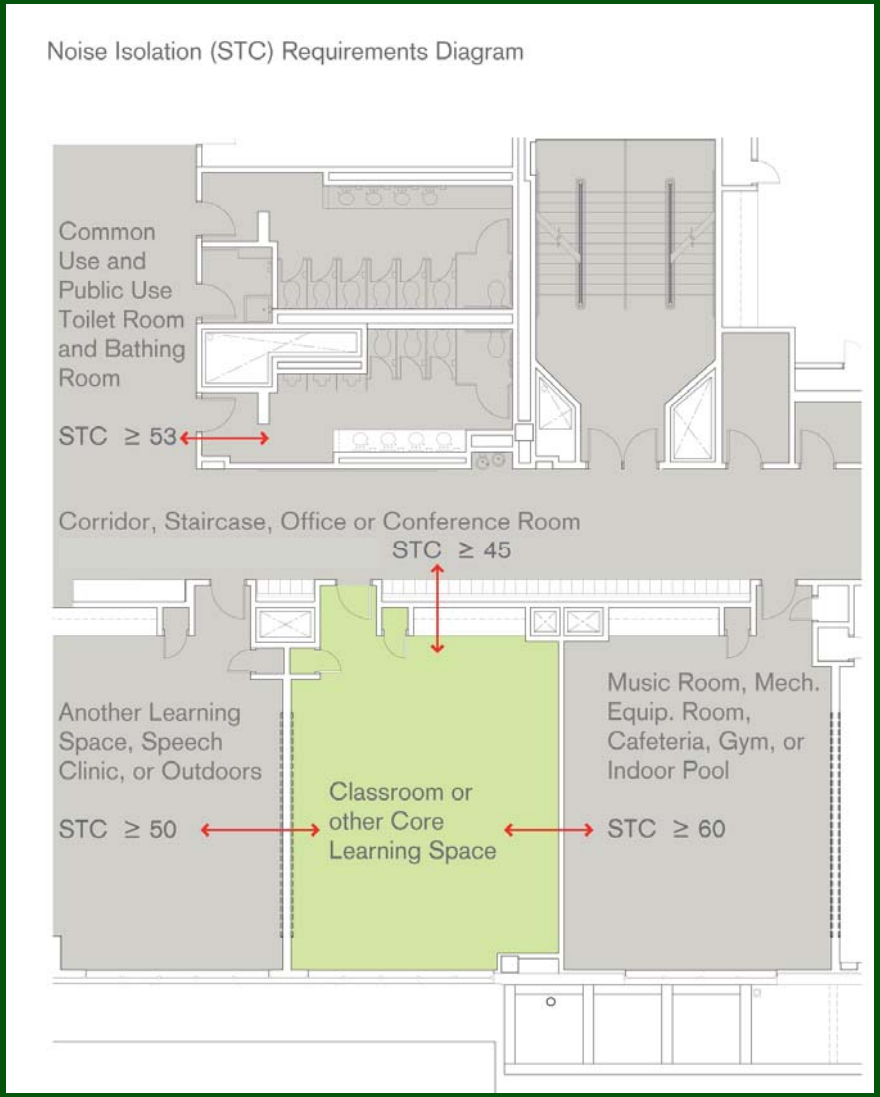
Based on a CHPS credit.

Indoor Environmental Quality Credits

Q8.1R Minimum Acoustical Performance

Control background sound levels and reverberation for instructional spaces and reduce noise transfer from adjacent spaces to enhance speech communication in the learning environment.

Based on a CHPS credit and a LEED Innovation in Design Credit.



Q8.2 Sound Isolation for Special Spaces

Reduce noise transfer from vertically adjacent spaces, which generate significant sound or impact noise levels, to offices, classrooms and other noise sensitive spaces located below.

Q8.3 Acoustic Windows

Provide adequate control of exterior noise potentially penetrating into instruction rooms and offices at sites adjoining objectionable exterior transportation noise sources - highways, railroads and airports.

Based on SCA experience.

Additional Credits

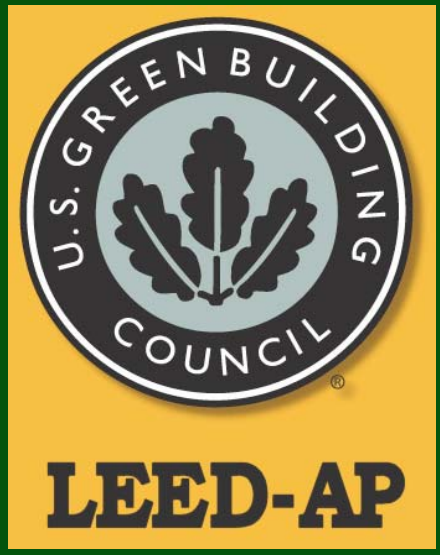
	LEED Reference	CHPS Reference (or SCA as noted)	SCA Credit Name (R=Required)		Credits With No Points Required for all	Credits With Points Required for all	Required if feasible*	Optional**
Additional Credits (11 Points)								
Required for All Projects	ID 2.1		A 1.1R	**LEED® Accredited Professional**		1		
Optional - Green Roofs	SS 7.2		A 2.1	**Heat Island Effect**, Roof				1
	SS 6.1		A 2.2	**Stormwater Design**, Quantity Control				1
Optional - Energy	EA 1.1		A3.1	**Optimize Energy Performance (new 10.5%, Existing 3.5%)**				1
	EA 1.2		A3.2	**Optimize Energy Performance (new 14%, Existing 7%)**				1
	EA 1.3		A3.3	**Optimize Energy Performance (new 17.5%, Existing 10.5%)**				1
	EA 1.4		A3.4	**Optimize Energy Performance (new 21%, Existing 14%)**				1
	ID 1.4		A3.5	**Renewable Energy**				1
Optional - Materials	MR 4.2, 5.2, 6, 7		A 4.1	**Additional Sustainable Materials**				1
Optional - IEQ		WA 3.2	A 5.1	**Low-Emitting Materials**, Furniture				1
		5.1.3	A 5.2	**Daylight in Classrooms**				1
Optional - Education	ID 1.1		A 6.1	**Building as Educational Tool**				1
				Totals for this section:	0NP	1	0	11

Additional Credits

A1.1R LEED Accredited Professional

To support and encourage the design integration required by an established level of familiarity with LEED, which the NYC Green Schools Guide is based on, and to streamline the certification process.

Based on a LEED credit.



Additional Credits

A2.1 Heat Island Effect, Roof

Reduce heat islands (thermal gradient differences between developed and undeveloped areas) to minimize impact on microclimate and human and wildlife habitat.

Based on a LEED credit.

Green Roof Installations

Photos by

Additional Credits

A2.2 Stormwater Design Quantity Control

Limit disruption of natural hydrology by reducing impervious cover, increasing on-site infiltration, and managing stormwater runoff.

Based on a LEED credit.


Site testing


Geotextile fabric


Stone infiltration bed


Porous Asphalt

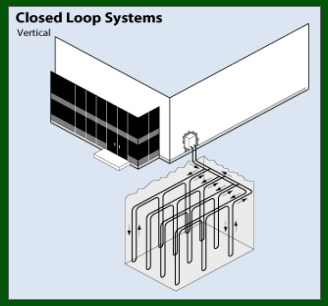
Additional Credits

A3.1- A3.4 Optimize Energy Performance

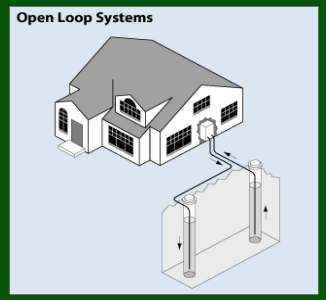
Achieve energy cost reduction levels above the required minimum standard in credit E3.1R to reduce environmental impacts associated with excessive energy use.

Based on a LEED credit.

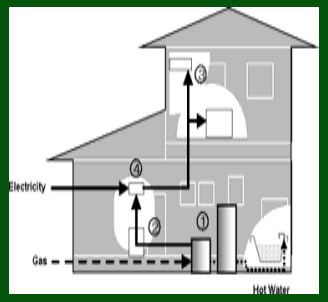
ALTERNATIVE ENERGY SYSTEMS



Closed Loop Heat Pump Geothermal Systems



Open Loop Heat Pump System



Cogeneration System Utilizing High Pressure Gas Turbines Coupled with Absorption Chillers and Hot Water Heat Exchangers

Additional Credits

A3.5 Renewable Energy

Encourage and recognize use of on-site renewable energy self-supply in order to reduce environmental and economic impacts associated with fossil fuel energy use.

Based on a LEED credit.

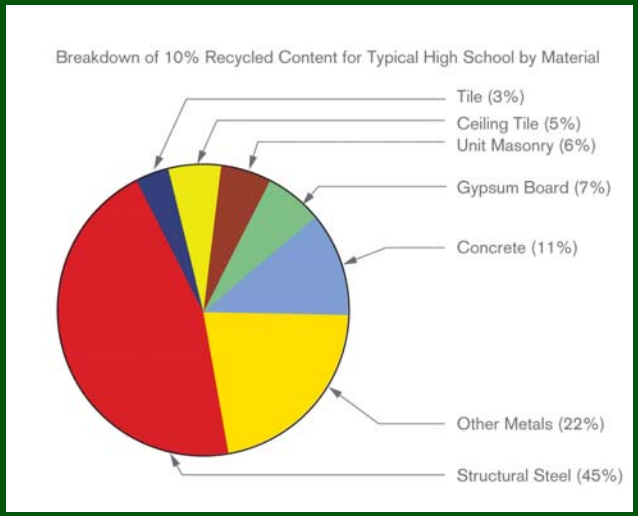
Solar Panels at Bronx High School of Science

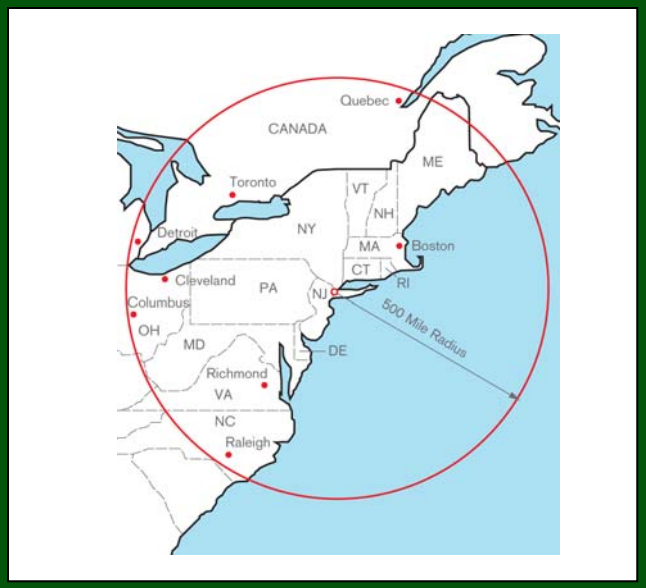
Additional Credits

A4.2 Additional Sustainable Materials

Increase the demand for building materials and products that have recycled content, are regionally extracted or contain renewable materials.

Based on LEED credits.



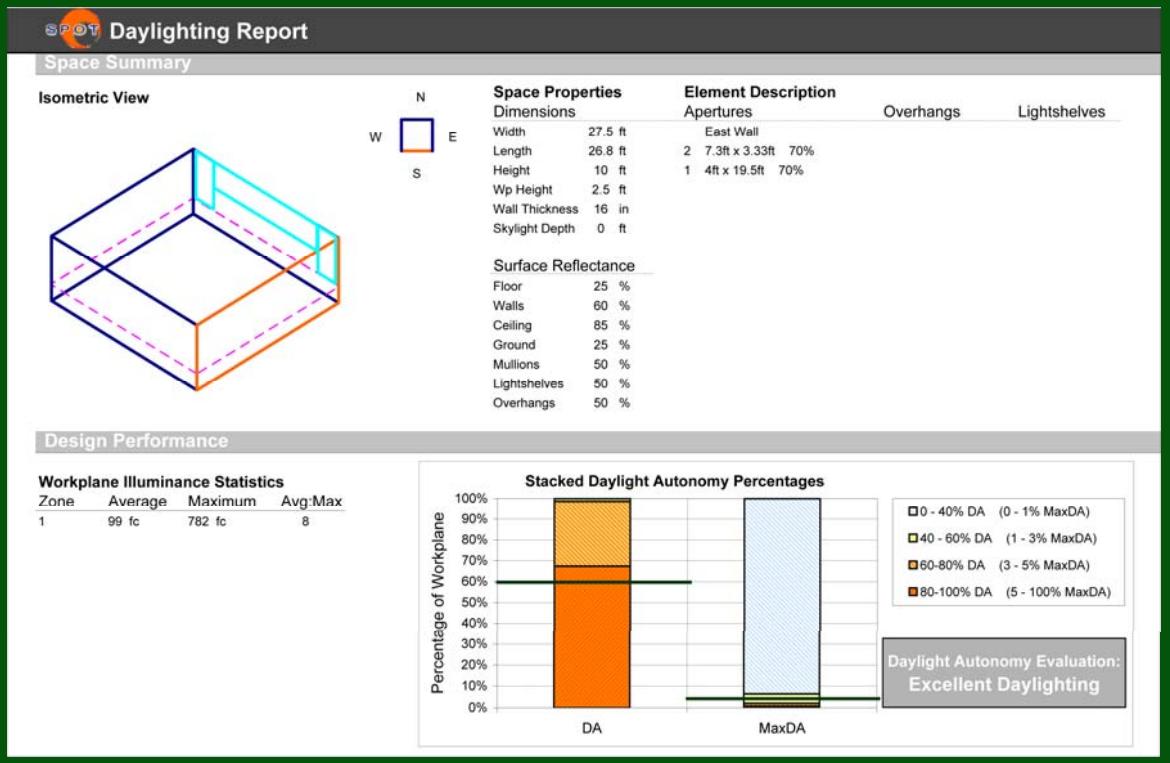


Additional Credits

A5.1 Daylight in Classrooms

Provide uniform light with minimal glare. Make ample use of natural daylight.

Based on a CHPS credit.



Additional Credits

A5.2 Low Emitting Materials, Furniture

Reduce the quantity of indoor air contaminants that are odorous, irritating and/or harmful to the comfort and well-being of installers and occupants.

Based on a CHPS credit.

NYC Green Schools Guide