NYC GREEN SCHOOLS GUIDE
This guide and the associated design, construction and operations standards on which it is based were developed with the thoughtful efforts and contributions of the following parties:

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ADDITIONAL CONTRIBUTIONS:
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This guide was developed based on materials from:

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These guidelines are adapted in part from and with the permission of the United States Green Building Council (USGBC) Leadership in Energy and Environmental Design (LEED) Green Building Rating System® for new construction, Version 2.2. References to LEED are incorporated in this guide because LEED is the most widely used nationally accepted green standard and because the USGBC provides many resources, including its reference guides, to support the design and construction of green buildings. The New York City School Construction Authority would like to acknowledge its appreciation to the USGBC for their national and international efforts and leadership in the promotion of green building design, operation and practices.

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### NYC GREEN SCHOOLS GUIDE RATING SYSTEM SUMMARY

**LEED Reference**

**CHPS Reference** *(as noted)*

**NYC GSG Credit Name**

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Totals for this section: 12NP 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 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 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

<table>
<thead>
<tr>
<th>Credits Required for all Projects (with no Point Value)</th>
<th>Credits Required for all Projects</th>
<th>Credits Required if Feasible</th>
<th>Optional Credits**</th>
<th>Total Number of Available Credit Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Totals</td>
<td>9 NP</td>
<td>28</td>
<td>17</td>
<td>11</td>
</tr>
</tbody>
</table>
Local Law 86/05 was enacted into law by the New York City Council in late 2005, establishing a demanding set of sustainable standards for public construction projects in New York City. This local law makes New York City one of the first and largest school districts in the nation to have sustainable school design, construction and operations guidelines required by law.

Sustainable school design and operation provides many benefits to students, school staff and the city as a whole. Sustainable schools:

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

The New York City School Construction Authority (SCA), with the New York City Department of Education (DOE), have created the NYC Green Schools Rating System to guide the sustainable design, construction and operation of new schools, modernization projects and school renovations and to achieve compliance with Local Law 86/05. This rating system is based on the LEED® (Leadership in Energy and Environmental Design) Green Building Rating SystemTM, which was developed by the US Green Building Council (USGBC). The NYC Green Schools Rating System includes enhancements beyond LEED-based on best practices for schools adopted from the Collaborative for High Performing Schools (CHPS) rating systems developed by the states of Washington, Massachusetts and New York and also on SCA best practices.

1.1 LL86/05 REQUIREMENTS FOR SCHOOLS

LEED/GREEN BUILDING STANDARD CERTIFICATION

LL 86/05 requires all New York City funded new schools, additions, and substantial reconstruction projects with construction budgets greater than $2M, to be “designed and constructed to comply with green building standards not less stringent than standards to achieve a LEED certified or higher rating.” Substantial reconstruction projects include reconstruction/rehabilitation of at least two of the three major systems (electrical, HVAC and plumbing) and the work must affect at least fifty percent (50%) of the building’s floor area. This would typically not include school Capital Improvement Program projects because these projects are smaller in scope.

The SCA/DOE have chosen to develop an independent sustainable design rating system to certify sustainability of applicable public school projects, as allowed by LL86/05. Based on careful consideration of the analysis and conclusions of an independent review dated March 12, 2007, of the NYC Green Schools Guide, the Director of the Office of Environmental Coordination, on behalf of the Mayor, found that the SCA’s NYC Green Schools Rating System will be no less stringent than LEED New Construction, version 2.2, for the achievement of a LEED Certified rating.

ENERGY COST REDUCTION

LL 86/05 requires all capital school projects with construction budgets greater than $12 M to reduce energy costs by at least 20% compared to the baseline referenced in LEED-NC version 2.1/EA Credit 1.
An additional 5% or 10% energy cost savings beyond the 20% mandate must be implemented, unless the payback on the investment exceeds 7 years.

**WATER USE REDUCTION**

LL 86/05 requires all capital projects involving the installation or replacement of plumbing fixtures (where that work has a construction budget greater than $0.5M) to reduce potable water consumption by a minimum of 30% compared to the baseline criteria referenced in LEED-NC 2.2 /WE Credit 3.2 or a minimum of 20% if waterless urinals are not approved by the NYC Department of Buildings. Note that while the text of LL86/05 references LEED-NC 2.1, the rules and regulations for LL86/05 have clarified that the reference standard to be used is the current version of LEED-NC. This requirement would apply to new schools, substantial reconstruction projects and Capital Improvement Program projects.

**SELECTED CAPITAL RENOVATION PROJECTS**

LL86/05 has special sustainable requirements for selected “capital renovation projects.” These are projects that are more limited in scope than a new school, addition, or substantial reconstruction and they do not require LEED certification or the equivalent. The SCA refers to these projects as Capital Improvement Program projects. The sustainable requirements for these projects are not addressed by this guide but are incorporated in the SCA Design Requirements, Standard Specifications and Standard Details. For general reference, a summary of these requirements follows below.

- Projects involving boiler replacement with construction budgets greater than $2M, or lighting replacement with construction budgets greater than $1M, must reduce energy costs by a minimum of 10% compared to the baseline criteria in the more stringent of LEED-NC V2.1/EA Credit 1 or the NYS Energy Code.
- Projects involving HVAC comfort controls replacement with construction budgets greater than $2M must reduce energy costs by a minimum of 5% as compared to the baseline criteria referenced in LEED-NC V2.1/EA Credit 1 or the NYS Energy Code, whichever is more stringent.
- Projects involving installation or replacement of plumbing fixtures with construction budgets greater than $0.5M must reduce potable water consumption by a minimum of 30% compared to the baseline criteria referenced in LEED-NC 2.2 /WE Credit 3.2 or by a minimum of 20% if waterless urinals are not approved by the NYC Department of Buildings.

### 1.2 NYC GREEN SCHOOLS RATING SYSTEM

The NYC Green Schools Rating System:
- Establishes sustainable building guidelines that allows projects to achieve sustainable standards equivalent to those established for a LEED-NC 2.2 certified or higher rating,
- Addresses specific sustainable issues in the design, construction and operation of New York City public school buildings.
- Reduces the cost and complexity of sustainability for schools.
- Incorporates the energy and water conservation requirements mandated by LL86/05.
- Includes betterment practices specific to schools and to NYC school construction and operation.
While LL86/05 requires that 50% of applicable projects apply for sustainable certification, the SCA and DOE plan to exceed the LL86/05 requirements by requiring certification under its system for all applicable projects.

1.3 A LEED-BASED SYSTEM

The central reason the SCA and DOE have chosen to create a new sustainable rating system for New York City Schools is that the LEED rating system is not school specific; LEED was created by the USGBC to address a wide variety of building types including commercial, office, retail, institutional and residential. The USGBC is developing a LEED application guide for schools. However the completion schedule for that application guide did not meet the LL86/05 compliance schedule and that guide does not address specific issues related to New York City public schools.

The SCA believes that it will better serve the students, staff and general public by adopting sustainable standards specifically developed for NYC public school buildings. The rating system that the SCA and DOE have developed has been determined to be no less stringent than LEED New Construction, version 2.2, for the achievement of a LEED® Certified rating.

The SCA and DOE determined which LEED credits to incorporate or omit by following a detailed process of developing a compliant scope of work for each credit and estimating the cost of compliance for different sizes and types of schools. Credits were selected for inclusion in the NYC Green Schools Rating System based on appropriateness of each credit to be required as a standard for New York City public schools, cost considerations and environmental benefit. There is a focus in the Green Schools Rating System on indoor environmental quality, which includes approximately one – third of the credits.
An example of an omitted credit is the LEED prerequisite prohibiting smoking, which was omitted to reduce documentation and review of a requirement that is already mandated by local law.

1.4 REDUCING THE COST AND COMPLEXITY OF SUSTAINABILITY IN SCHOOLS

Because of the high volume of construction in a narrow programmatic building type, New York City public school design has historically been based on design standards. The SCA continues that approach by using standards that have been carefully researched and refined to provide well-planned, durable, cost–effective schools. The SCA standards cover all aspects of school design from architectural planning to specific MEP systems. These standards include Design Requirements, Standard Specifications, Standard Detail Drawings and Standard Room Layouts. It is important to the SCA’s mission to standardize the approach to sustainability in order to contain costs, maintain aggressive project delivery schedules and to direct Design Teams in a systematic and efficient manner.

The SCA has developed revised standards that incorporate the requirements of the NYC Green Schools Rating System. Affected standards for each credit are referenced in this guide.

1.5 LL86/05 ENERGY AND WATER CONSERVATION COMPLIANCE

The SCA/DOE conducted extensive energy modeling and water use reduction calculations to explore cost–effective options for complying with the LL86/05 energy and water conservation requirements. A wide range of energy conservation measures were studied using prototypical school building models for each type of school building, from early childhood center through high school, and additions. Per LL86/05, this modeling was done using ASHRAE 90.1-1999, as referenced in LEED-NC 2.1. Modeling for each system evaluated was also conducted using ASHRAE 90.1-2004 with Appendix G, as required by the current version of LEED-NC 2.2. Parametric studies were done to confirm that results continued to apply as various site and design factors changed. The SCA selected standard energy conservation measures for schools is based on these prototypical modeling studies.

1.6 NYC GREEN SCHOOLS RATING SYSTEM - ENHANCEMENT CREDITS

During the process of developing the NYC Green Schools Rating System, each LEED credit was evaluated for applicability to New York City schools. Other state guidelines for sustainable schools were reviewed for best practices to be incorporated in the NYC Green Schools Rating System. Based on this "best practices" review, the SCA/DOE incorporated many prerequisites and credits from Collaborative for High Performing Schools (CHPS) rating systems. The SCA/DOE also referenced selected requirements from CHPS credits that were incorporated into LEED-based credits to make SCA credits more stringent or more appropriate for schools. One example is the inclusion of mold prevention measures into the LEED-based credit for indoor air quality during construction.

The SCA/DOE considered adopting NY-CHPS as a standard but chose not to do so for several reasons, including the fact that many credits as written did not apply to New York City requirements. The SCA/DOE
determined that basing the system directly on LEED would facilitate demonstration of equivalency as required by LL86/05.

Other enhancement credits based on the SCA’s experience with New York City public schools are also included in the rating system.

1.7 NYC GREEN SCHOOLS RATING SYSTEM – REQUIRED CREDITS

The NYC Green Schools Rating System has more requirements and fewer options than LEED. It includes credits based on 6 of the 7 LEED prerequisites and 47 of the 69 LEED credits. In addition to reducing the number of credits, the NYC Green Schools Rating System has created a more directed system by instituting “required credits.” In LEED and CHPS, the only required credits are prerequisites, whereas in this rating system all credits (except the 11 optional credits) are required, if they are possible given the constraints of a specific project. Credits based on LEED and CHPS prerequisites have no point value in the NYC Green Schools Rating System to make the system easily comparable to other rating systems.

The SCA/DOE rating system makes a distinction between two types of required credits:

“Required for all” credits must be achieved by all applicable projects. This category includes 26 LEED-based credits, contributing to system equivalency. If an exceptional project is unable to comply with at least 26 of the “required for all” LEED-based credits, it will still be required to achieve compliance on at least 26 of the LEED-based credits included in the NYC Green Schools Rating System.

“Required if feasible” credits are credits that projects must comply with unless the Design Team provides an acceptable explanation of why that credit cannot be achieved and this is accepted and approved by the SCA. All projects are required to comply with these credits if possible, unless site constraints, programmatic requirements or extraordinary costs do not permit compliance. An example of a required if feasible credit is the LEED-based credit for Building Reuse. This credit would be pursued by modernization and renovation projects, but is not available to new building projects.

The SCA system also includes optional credits in the “Additional” credit section. These credits may only be pursued with SCA permission. These credits include items that the SCA/DOE felt had sustainable application to New York City Public Schools but which were not selected as standards for all schools at this time because of their cost or because more experience with operations and maintenance in schools would be
required.

The SCA believes that the high level of required credits in this system will result in schools that provide greater environmental and health benefits for occupants and users, while maintaining a consistent design approach. Below is a summary of the types of credits and whether they are based on LEED credits.

<table>
<thead>
<tr>
<th>SCA Rating System</th>
<th>Credits Required for all Projects (with no point Value)</th>
<th>Credits Required for all Projects (with point Value)</th>
<th>Credits Required if Feasible</th>
<th>Optional Credits (Require SCA permission)</th>
<th>Total Number of Available Credit Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>LEED-Based</td>
<td>3 NP*</td>
<td>26</td>
<td>13</td>
<td>9</td>
<td>48</td>
</tr>
<tr>
<td>Non-LEED-Based</td>
<td>6 NP</td>
<td>2</td>
<td>4</td>
<td>2</td>
<td>8</td>
</tr>
<tr>
<td>Totals</td>
<td>9 NP</td>
<td>28</td>
<td>17</td>
<td>11</td>
<td>56</td>
</tr>
</tbody>
</table>

* In addition to the credits indicated here, there are three LEED prerequisites incorporated into SCA credits with point value. Credits E1.1R, E1.2R and Q1.1R each incorporate a LEED prerequisite and a related LEED credit into one SCA credit. The total number of LEED prerequisites incorporated into the system is 6.
### 1.8 Abbreviation List

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACEEE</td>
<td>American Council for an Energy Efficient Economy</td>
</tr>
<tr>
<td>A/E</td>
<td>Architect/Engineer (typically A/E of Record)</td>
</tr>
<tr>
<td>ASHRAE</td>
<td>American Society of Heating, Refrigerating and Air-Conditioning Engineers</td>
</tr>
<tr>
<td>BMP</td>
<td>Best Management Practice</td>
</tr>
<tr>
<td>BMS</td>
<td>Building Management System</td>
</tr>
<tr>
<td>BPS</td>
<td>Best Practice Standards</td>
</tr>
<tr>
<td>CBECs</td>
<td>Commercial Buildings Energy Consumption Survey</td>
</tr>
<tr>
<td>CFC</td>
<td>Chlorofluorocarbons</td>
</tr>
<tr>
<td>CGP</td>
<td>Construction General Permit</td>
</tr>
<tr>
<td>CHPS</td>
<td>Collaborative for High Performing Schools</td>
</tr>
<tr>
<td>CI</td>
<td>Corporate Interiors (typically LEED-CI)</td>
</tr>
<tr>
<td>CIR</td>
<td>Credit Interpretation Ruling (from USGBC)</td>
</tr>
<tr>
<td>CMU</td>
<td>Concrete Masonry Unit</td>
</tr>
<tr>
<td>CRI</td>
<td>Carpet and Rug Institute</td>
</tr>
<tr>
<td>CxA</td>
<td>Commissioning Agent</td>
</tr>
<tr>
<td>DEC</td>
<td>NYC Department of Environmental Conservation</td>
</tr>
<tr>
<td>DEP</td>
<td>NY State Department of Environmental Protection</td>
</tr>
<tr>
<td>DOE</td>
<td>NYC Department of Education</td>
</tr>
<tr>
<td>DOT</td>
<td>NYC Department of Transportation</td>
</tr>
<tr>
<td>DSF</td>
<td>Division of School Facilities</td>
</tr>
<tr>
<td>DSNY</td>
<td>NYC Department of Sanitation</td>
</tr>
<tr>
<td>EA</td>
<td>Effective Aperture</td>
</tr>
<tr>
<td>ECC</td>
<td>Early Childhood Center</td>
</tr>
<tr>
<td>ECM</td>
<td>Energy Conservation Measure (ECM)</td>
</tr>
<tr>
<td>EEM</td>
<td>Energy Efficiency Measure</td>
</tr>
<tr>
<td>ETV</td>
<td>Environmental Technology Verification</td>
</tr>
<tr>
<td>FEMA</td>
<td>Federal Emergency Management Agency</td>
</tr>
<tr>
<td>F&amp;E</td>
<td>Furniture and Equipment (typically SCA/F&amp;E Unit)</td>
</tr>
<tr>
<td>FID</td>
<td>Facilities Inspection Division/SCA</td>
</tr>
<tr>
<td>FIRM</td>
<td>Flood Insurance Rate Maps</td>
</tr>
<tr>
<td>FMSI</td>
<td>Facilities Management System Integrator</td>
</tr>
<tr>
<td>FSC</td>
<td>Forestry Stewardship Council</td>
</tr>
<tr>
<td>HCFC</td>
<td>Hydrochlorofluorocarbons</td>
</tr>
<tr>
<td>HEPA</td>
<td>High-Efficiency Particulate Arrestor</td>
</tr>
<tr>
<td>HID</td>
<td>High-Intensity Discharge</td>
</tr>
<tr>
<td>HVAC</td>
<td>Heating, Ventilating and Air Conditioning</td>
</tr>
</tbody>
</table>
IEH  Industrial and Environmental Hygiene
IES  Illuminating Engineering Society
IESNA Illuminating Engineering Society of North America
IEQ  Indoor Environmental Quality
IIC  Impact Insulation Class
IPMVP  International Performance Measurement & Verification Protocol
IS  Intermediate School

LEED  Leadership in Energy and Environmental Design
LPD  Lighting Power Density
MEP  Mechanical, Electrical, Plumbing
MERV  Minimum Efficiency Reporting Value

NC  New Construction (typically LEED-NC)
NP-DES  National Pollutant Discharge Elimination System
NRC  Noise Reduction Coefficient

PS  Primary School
QA/QC Quality Assurance/Quality Control (typically SCA QA/QC Department)

RH  Relative Humidity
RTU  Roof top units

SAA  Sound Absorption Average
SCA  NYC School Construction Authority
SMACNA  Sheet Metal and Air Conditioning Contractors National Association

SPOT  Sensor Placement + Optimization Tool
SPDES  State Pollutant Discharge Elimination System
SRI  Solar Reflectance Index
STC  Sound Transmission Class
SWPP  Stormwater Pollution Prevention

TMDL  Total Maximum Daily Load
TSS  Total Suspended Solids

USG  United States Gypsum
VCT  Vinyl Compositional Tile
VOC  Volatile Organic Compounds
VT  Visible Transmittance

WWR  Window to Wall Ratio
The SCA/DOE compliance process is similar to the LEED certification process but requires compliance verification earlier during the design phase. The SCA/DOE compliance process is less complex for Design Teams and Contractors than LEED certification review because complying systems have been reviewed and incorporated into the SCA design standards.

SCA Compliance Review will be administered by trained SCA Architecture and Engineering (A&E) Department reviewers and SCA/DOE commissioning agents who will monitor design and construction compliance and review certificates prepared by the A/E of Record during the design and construction phases and by the General Contractor during the construction phase.

Design Teams should note that this rating system, unlike LEED, is not competitive. Projects must pursue all required and feasible credits. There is no incentive or differentiation in ratings for schools achieving more points because the number of points achieved will typically be based only on the circumstances of site and scope.

### 2.1 DESIGN PHASE CERTIFICATION PROCESS

The A/E of Record will follow the requirements in this guide to develop sustainable school designs compliant with the NYC Green Schools Rating System. SCA compliance reviews during the design phase of the project are conducted by a trained group of SCA A&E reviewers. The SCA/DOE Commissioning Unit must provide their concurrence with SCA A&E that the 100% sustainable design report meets the required criteria based on their review of the documentation submitted and an audit of selected credits.

At the conclusion of the 100% Design Phase, the A/E of Record will prepare a Sustainable Design Compliance Certification package. This package is provided to the SCA Facilities Inspection Division (FID) as documentation of design compliance with LL86/05 for its use in the plan approval process and commissioning.

The steps in the SCA/DOE sustainable design compliance process include:

- **Pre-Schematic** – Development of site selection credit documentation.
- **Schematic Design** – Submission of project checklist and compliance narratives and documentation for site selection credits.
- **Design Development** – Submission of sustainable design report including credit compliance narratives.
- **60% Design** – Submission of sustainable design report including design phase credit calculations and forms.
- **100% Construction Documents** – Submission of final sustainable design report including Design Compliance Certification.

The procedures for the sustainable certification process during the construction and post – occupancy phases are elaborated in section 2.2. Note that the commissioning process takes place throughout the project design and construction.
SUSTAINABLE DESIGN PROCEDURES

FEASIBILITY STUDY PHASE
Site feasibility studies are often prepared by designers who are independent of the school Design Team ultimately selected to execute the project. Designers assigned to prepare Feasibility Studies must submit documentation of sustainable site information as described in the SCA Design Requirement for the scope of feasibility studies. The SCA may choose on a case-by-case basis to require testing to determine viability of sustainable measures such as geothermal wells or on-site stormwater disposal.

PRE-SCHMATIC DESIGN
1. The Design Team is required to familiarize themselves with the NYC Green Schools Guide and Project Checklist and the LL86/05 Reporting Form.
2. Pre-schematic conceptual design options should consider sustainable measures that are attainable for the site and building appropriate to this level of design, especially as they relate to selected site credits.
3. No submittal is required at this phase.

SCHEMATIC DESIGN
Include the following in the Sustainable Design Report:
1. Submit NYC Green Schools Rating System Project Checklist with proposed credits indicated.
2. Submit Credit Compliance Narratives and documentation for the site credits related to site selection (identified in credit submittals). Information may be drawn from the project feasibility study.
3. If the SCA has provided permission/direction to pursue credits from the Additional Credits section, submit a cost analysis for NYC Green Schools Rating System Additional Credit cost allocation, when applicable.
4. Submit a completed LL86/05 Reporting Form – Phase I.

DESIGN DEVELOPMENT
Include the following in the Sustainable Design Report:
1. Submit updated Project Checklist – explain any changes.
2. Submit a Credit Compliance Narrative for each credit (except the site selection credits previously documented unless they have changed). Each narrative should describe the approach to pursuing the credit, compliance methodology, SCA specification sections and standard details that will be included in the construction documents to achieve compliance. Include an explanation of each credit that is determined to be not feasible for this project. In exceptional cases where it is determined that any of the required 26 LEED-based credits cannot be achieved, the Design Team must identify an alternate “Required If Feasible” LEED-based credit.
3. Submit the Project Commissioning Plan and Commissioning Matrix modified to apply to this project.
4. Submit a cost analysis for NYC Green Schools Rating System Additional Credit cost allocation when applicable.

60% CONSTRUCTION DOCUMENTS
Construction documents submitted with this submittal must incorporate sustainable requirements. Include the following in the Sustainable Design Report:
1. Submit updated Project Checklist – explain any changes.
2. Submit any revised Credit Compliance Narratives, as required.
3. Submit calculations, design studies, forms and other required credit documentation for all design phase credits (except for site selection credits previously documented).
4. Submit a cost analysis for NYC Green Schools Rating System Additional Credit cost allocation when applicable.
5. Provide documentation on any changes in the SCA/DOE’s project requirements.

100% CONSTRUCTION DOCUMENTS
Construction documents submitted with this submittal must incorporate sustainable requirements. Include the following in the Final Sustainable Design Report:
1. Submit final Project Checklist.
2. Submit any revised Credit Compliance Narratives, as required.
3. Submit Design Compliance Certificates signed by architect and engineer of record.
4. Submit a cost analysis for NYC Green Schools Rating System Additional Credit cost allocation.
5. Provide documentation on any changes in the SCA’s project requirements.
6. Submit LL86/05 Reporting Form – Phase II with supporting documentation.


2.2 CONSTRUCTION PHASE CERTIFICATION PROCESS

Compliance reviews during the construction period will be by the Commissioning Unit. After the completion of the review process, the Commissioning Unit/SCA FID will verify that the project complies with the NYC Green Schools Rating System and the requirements of LL86/05.

CONSTRUCTION PHASE
1. Review construction submittals for compliance with specified sustainable requirements. For substitutions, indicate that the item meets or exceeds the sustainable standards specified.
2. Submit LL86/05 Reporting Form – Phase III at the completion of construction.
3. Review Contractor’s compliance certificate and supporting documentation per NYC Green Schools Guide and specified requirements.

POST-CONSTRUCTION PHASE
Note that the final LL86/05 Reporting Form – Phase IV is completed by the SCA/DOE, after a period of occupancy, as designated on the LL86/05 Reporting Form.

Please refer to the Compliance Certification Process diagram at end of this section.
2.3 COMMISSIONING

While LEED credits require commissioning of a minimum set of systems, the SCA and DOE have determined to conduct whole building commissioning in accordance with the SCA/DOE Commissioning Plan. Commissioning will be conducted by a joint commissioning group made up of trained staff from the SCA Quality Assurance/Quality Control Group and staff from the DOE Division of School Facilities (DSF). The commissioning process will be monitored by the designated project commissioning agent (CxA) from this group. A description of the commissioning process and a copy of the project specific Commissioning Plan and Commissioning Matrix will be incorporated in the construction contract documents, along with commissioning requirements in the applicable specifications sections.

The Commissioning Unit is also responsible for reviewing sustainable compliance during construction. This group will perform verification audits to insure that any substitutions are in compliance with the SCA Green Schools Guide requirements for sustainability.

At the completion of construction, the SCA/DOE commissioning unit will review the Construction Phase Compliance Certification Package for compliance and audit a selection of credits to confirm compliance.

2.4 THIRD-PARTY AUDIT OF PROJECTS

At the end of each fiscal year, the SCA will provide The Office of Environmental Coordination (OEC) with a list of new construction, addition and substantial reconstruction projects completed during that fiscal year. The OEC will select 10% of these projects to receive a third-party certification audit. The purpose of the verification is to review a sample of projects for compliance with the requirements of the NYC Green Schools Rating System. Where possible, the audit sample will be representative of SCA’s distribution of project types (new construction of small schools and large schools, as well as rehabilitation projects). The third-party auditor will be under contract to the Office of Environmental Coordination.
Project Checklist
Design
Submittal including calculations
Incorporate credit requirements in construction documents.

Develop project specific commissioning plan and specs

Second Commissioning Review of design documents

Commissioning of Building and Systems including testing and balancing

Complete Commissioning Report. Review building operation within 10 months.

Project Checklist
LL86 Reporting Form (Phase II)
Certification Forms
Review construction documents for modifications to design submittal.

Sustainable submittal review.
Preparation of sustainable construction phase documentation.

Project Checklist
LL86 Reporting Form (Phase III)
Design & Construction Certification Statements
Back-up documentation

Review Energy Efficiency with DCAS
Revise SCA standards if necessary.

Complete & Report LL86 Phase IV Data

Commissioning Report. Review building operation within 10 months.

Review Energy Efficiency with DCAS
Revise SCA standards if necessary.

Report LL86 Phase III Data

Review Final compliance & certification review

Report LL86 Phase II Data

Review

Incorporate credit requirements in construction documents.


Commissioning of Building and Systems including testing and balancing

Complete Commissioning Report. Review building operation within 10 months.

Review Energy Efficiency with DCAS
Revise SCA standards if necessary.

Report LL86 Phase IV Data

Review Final compliance & certification review

Report LL86 Phase I Data
3.0 LL86/05 COMPLIANCE AND REPORTING

3.1 LEED COMPLIANCE OR EQUIVALENCY

LL 86/05 states that alternative green building standards, no less stringent than LEED-NC, may be used with Mayoral approval. Following extensive study and preparation of the NYC Green Schools Guide, SCA/DOE prepared an Equivalency Report and Equivalency Analysis documentation to demonstrate to the Mayor’s Office that the NYC Green Schools Rating System develops schools that achieve sustainable standards equivalent to, or more stringent than, LEED-NC certification. The NYC Mayor’s Office of Environmental Coordination has issued findings demonstrating that this rating system developed by the SCA/DOE is no less stringent than LEED standards for certification.

Note that alternative compliance measures are not permitted for other LL86/05 mandates regarding energy and water reduction requirements.

3.2 LEED-NC VERSION 2.1 ENERGY COST REDUCTION MODELING

LL 86/05, as enacted, makes specific reference to, and requires compliance with, LEED-NC version 2.1 Energy & Atmosphere credits, which address ASHRAE 90.1-1999 as a reference standard for measuring energy efficiency. The prototypical modeling conducted by the SCA in developing this guide shows that schools will meet and in some cases surpass the energy cost reduction requirements of LL86/05 using a standardized combination of energy conservation measures developed by the SCA. Atypical schools will require project specific demonstration of energy cost reduction using LEED-NC 2.1 methodology referencing ASHRAE 90.1-1999, per LL86/05.

3.3 LEED-NC VERSION 2.2 ENERGY COST REDUCTION MODELING

The USGBC has updated the LEED-NC rating system and issued LEED-NC version 2.2. LEED 2.2 Energy and Atmosphere credits reference an updated ASHRAE standard – ASHRAE 90.1 – 2004 and Appendix G thereof. The energy performance levels prescribed by LEED 2.2 (ASHRAE 90.1-2004 and Appendix G) are more stringent than the 1999 version.

The NYC Green Schools Rating System energy credits reference the same 2004 ASHRAE standard as the current version of LEED. The SCA has conducted prototypical modeling to demonstrate compliance of typical schools with this standard and SCA credit E 3.1R. Atypical schools must demonstrate compliance on a project specific basis.

Energy cost reduction credit points (SCA credits A3.1 through A3.4) cannot be achieved using prototypical modeling; these credits require project specific documentation and SCA direction/permission to pursue. Projects that conduct project specific modeling must do so using both ASHRAE 90.1-1999 to demonstrate LL86/05 compliance and ASHRAE 90.1-2004 to achieve energy cost reduction credit points.
3.4 LL86/05 ANNUAL REPORTING REQUIREMENTS

LL86/05 PROJECT REPORTING
Reporting forms for each capital project must be completed and submitted in accordance with guidelines issued by the Mayor’s Office of Operations. The A/E of Record will prepare these forms for Phases I through III: at the completion of schematic design and 100% construction documents and at the completion of construction. The SCA’s will enter the data in the City’s database. The SCA/DOE will complete the final LL86/05 form – Phase IV that is required after occupancy.

ENERGY CONSERVATION REPORTING
In place of project specific energy modeling for each new project, the SCA has developed standardized energy system prototypes as model systems for schools. The prototype ‘standard systems’ have been pre-determined to be compliant with LL86/05 energy cost reduction mandates through energy modeling studies. Prototype systems were developed through energy modeling for typical school buildings and scaled in the modeling exercise to equate with the size and energy requirements of other typical school buildings – high schools, primary schools, early childhood centers, additions and modernizations.

It is intended that Design Teams utilize the scaled results of the energy modeling study as the reporting basis for each typical school building type – early childhood centers, primary schools, intermediate schools, high schools, modernizations and additions. This approach is viable because of the standardization in school programs, Design Requirements, specifications, details and building systems. This time and cost-effective approach allows the SCA to meet its Capital Plan commitment goals and comply with LL86/05 requirements.

3.5 UPDATING THE GREEN SCHOOLS GUIDE

REGULATORY CHANGES
When there are modifications or revisions to the New York City Building Code, New York State Energy Conservation Construction Code, ASHRAE standards, Local Law 86 and/or the rules governing green building standards the SCA will revise its energy models, the NYC Green School Rating System, the NYC Green Schools Guide and other related SCA design standards and guidelines, as appropriate, to reflect regulatory changes. The SCA will provide the Office of Environmental Coordination (OEC) with a written explanation of all regulatory changes and the updates made and provide a copy of the updated documents. In the event that the SCA determines that a regulatory change does not impact the NYC Green Schools Guide, SCA will provide OEC with a written explanation of this determination.

UTILITY RATE CHANGES
As the utility rates paid by Department of Citywide Administrative Services (DCAS) for schools change, the SCA will assess the impact of such rate changes on the energy modeling and determine whether energy efficiency measures need to be revised to comply with LL86/05. If energy efficiency measures are required to be revised, the SCA will provide the Office of Environmental Coordination (OEC) with a copy of the updated energy report and revisions to the applicable portions of the NYC Green Schools Guide. In the event the SCA determines that the rate changes do not impact the NYC Green Schools Guide and compliance with LL86/05, the SCA will provide OEC with a written explanation of this determination.
Designers can improve the interaction between buildings and their surroundings by taking advantage of site conditions and by reducing negative impacts of the built environment on the site and surroundings.

The credits in this section address site selection, massing and orientation of buildings, conservation of natural resources, and reduction of building impacts. Prudent site selection is essential for utilizing existing infrastructure, promoting appropriate density in urban development and protecting environmentally sensitive areas such as wetlands and flood prone areas. Massing and orientation of buildings impact daylighting opportunities, provide protection from wind and weather conditions and can help conserve land and protected habitats. The impact of school buildings on their environment can be mitigated by locating schools near public transportation, reducing stormwater runoff, controlling exterior light pollution, reducing heat island effects and limiting construction related pollution.

One of the greatest challenges in building new schools in New York City is finding appropriate sites. The SCA site selection process includes the consideration of available properties that are within the geographical and jurisdictional area of need, which meet the minimum size requirement for the targeted project.

All Design Teams need to evaluate the advantages and disadvantages of the selected site and design schools to respond to the selected sites in a sustainable way.
CONSTRUCTION ACTIVITY POLLUTION PREVENTION

INTENT

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

This credit is required for all projects.

REQUIREMENTS

Create and implement an Erosion and Sedimentation Control Plan, including a narrative and drawing, for all construction activities associated with the project. LEED requires that the plan conform to the erosion and sedimentation requirements of the 2003 EPA Construction General Permit (CGP) or Local Standards and Codes, whichever is more stringent. The plan shall describe the measures implemented to accomplish the following objectives:

1. Prevent loss of soil during construction by stormwater runoff and/or wind erosion, including protecting topsoil by stockpiling for reuse.

2. Prevent sedimentation of stormwater or receiving streams.

3. Prevent polluting the air with dust and particulate matter.

The EPA CGP outlines the provisions necessary to comply with Phase I and Phase II of the National Pollutant Discharge Elimination System (NPDES) program. While the EPA CGP only applies to construction sites greater than one acre, these requirements apply to all projects for the purposes of this credit.

For projects over one acre and requiring a full Stormwater Pollution Prevention Plan (SWPP), the Design Team must develop the Erosion and Sedimentation Control Plan. For smaller projects the Erosion and Sedimentation Control Plan will be completed by the Contractor per the Project Specifications.
The SCA specification Section 02200 details these requirements and related submittals. The specification references the New York State Discharge Pollution Elimination System (NY-SPDES), which has been approved by the United States Environmental Protection Agency for the control of wastewater and stormwater discharges in accordance with the Clean Water Act, but is broader in scope than that act because it controls point source discharges to groundwaters as well as surface waters.

An Erosion and Sedimentation Control Plan should include appropriate strategies such as temporary and permanent seeding, mulching, earth dikes, silt fencing, sediment traps, sediment basins, temporary gravel at construction site entrance, temporary block inlet protection, surface roughening, and surface stabilization, tree preservation and protection, land grading and dust control.

**SCHEMATIC DESIGN**

No credit submittal.

**DESIGN DEVELOPMENT**

ARCHITECT AND CIVIL ENGINEER’S RESPONSIBILITY

- Submit a narrative summarizing the design approach for credit compliance and identifying applicable SCA standards to be incorporated into design documents. Indicate whether the Design Team will develop the Erosion and Sedimentation Control Plan.

**60% CONSTRUCTION DOCUMENTS**

ARCHITECT AND CIVIL ENGINEER’S RESPONSIBILITY

- Submit appropriate specification sections modified for project.
- Submit the Erosion and Sedimentation Control Plan for projects where this document is to be developed by the Design Team.

**100% CONSTRUCTION DOCUMENTS**

ARCHITECT AND CIVIL ENGINEER’S RESPONSIBILITY

- For Projects where the Design Team has developed the Erosion and Sedimentation Control Plan, submit Certification Form and updated narrative as necessary.

**CONSTRUCTION**

CONTRACTOR’S RESPONSIBILITY

Per the Project Specifications:

- For projects not required to comply with SPDES, submit an Erosion and Sedimentation Control Plan drawing and narrative.
- Submit Contractor’s Certification Form.

DESIGN TEAM’S RESPONSIBILITY

- Review Contractor’s submittal for compliance.

**REFERENCES**

LEED-NC Credit SS Pr 1
Construction Activity Pollution Prevention

SCA DESIGN REQUIREMENTS
None

SCA STANDARD SPECIFICATIONS
02200 Earthwork

SCA STANDARD DETAILS
None

OTHER REFERENCES

NYS DEC Standards and Specifications for Erosion and Sediment Control
Temporary Structural Measures:

NYS DEC SPDES General Permit For Construction Activity:
http://www.dec.state.ny.us/website/dow/gen_constr.pdf

NYS DEC Sample Erosion and Sediment Control Plan:
http://www.dec.state.ny.us/website/dow/toolbox/escstandards/appendixtl.pdf

NPDES EPA Construction General Permit:
http://cfpub.epa.gov/npdes/stormwater/cgp.cfm
Avoid the selection and development of inappropriate sites, and/or portions of sites, and reduce the environmental impact of locating the building on a site. This credit is required for all projects.

Do not develop buildings, hardscape, roads or parking areas on portions of the site that meet any of the following criteria:

1. Previously undeveloped land whose elevation is lower than five feet above the elevation of the 100-year flood as defined by the Federal Emergency Management Agency.

2. Land that is specifically identified as habitat for any species on Federal or State threatened or endangered species lists.

3. Land within 100 feet of any wetlands as defined by United States Code of Federal Regulations 40 CFR, Parts 2130-233 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.

4. Previously undeveloped land that is within 50 feet of a water body, defined as seas, lakes, rivers, streams and tributaries that support or could support fish, recreation or industrial use, consistent with the terminology of the Clean Water Act.

5. Land that 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.
The SCA Design Requirement for Site feasibility study report includes documentation of this credit. Potential school project sites are identified with the input of the NYC Department of Education, the SCA and other parties. Feasibility studies are often conducted by a different entity than the school Design Teams.

To ensure that sustainable site issues are considered, the SCA Design Requirement outlining the scope of services for feasibility studies requires documentation of the items listed in this credit. In cases where a feasibility study has been completed, the Design Team may find useful information for documenting this credit in the feasibility study.

The SCA Design Requirement 1.3.1.1 (Building Location and Orientation) includes requirements for this credit.

**SCHEMATIC DESIGN**

**ARCHITECT’S RESPONSIBILITY**
- Submit a narrative summarizing compliance with each of the credit site selection criteria.
- Include information demonstrating whether site was previously developed.
- For previously undeveloped land, submit a site plan indicating elevations in relation to the 100-year flood.
- Submit US Fish and Wildlife Service listing of endangered species for the county. Provide site specific documentation if site is adjacent to a river or coastline, or if list includes species besides short nose sturgeon, piping plover, roseate turn and sea beach amaranth.
- Submit site specific documentation from the New York Natural Heritage Program on whether site is the habitat for threatened or endangered species.
- Submit documentation of proximity to wetlands and bodies of water. Include annotated plan if site is within 50 feet or within state or local setback distances.
- If project is on public parkland, indicate if land of equal or greater value was accepted in trade by landowner.

**DESIGN DEVELOPMENT**

No credit submittal.

**60% CONSTRUCTION DOCUMENTS**

No credit submittal.

**100% CONSTRUCTION DOCUMENTS**

**ARCHITECT’S RESPONSIBILITY**
- Submit the Certification Form with completed information for this credit.
- Submit updated documentation as necessary.

**CONSTRUCTION**

No credit submittal.

**REFERENCES**

- LEED-NC 2.2 Credit SS 1 Site Selection
- SCA DESIGN REQUIREMENTS
  - 1.1.3.1 Feasibility Study
  - 1.3.1.1 Building Location and Orientation
- SCA STANDARD SPECIFICATIONS
  - None
- SCA STANDARD DETAILS
  - None
- OTHER REFERENCES
  - New York Natural Heritage Program
    - 625 Broadway, 5th Floor
    - Albany, NY 12233-4757
    - Phone: (518) 402-8935
    - http://www.dec.state.ny.us/website/dfwmr/heritage/inforeq.htm
  - US Fish and Wildlife Service
    - Islip Field Office
    - Phone: (631)776-1401
    - http://www.fws.gov/northeast/nyfo/es/section7.htm (see county list of endangered species)
Encourage the analysis of sustainable design factors in the pre-design phase. A thorough site analysis allows designers to make informed design decisions and to take full advantage of solar orientation, prevailing wind direction, topography and landscape.

This credit is required, if feasible, for all projects.

Implement no fewer than three of the following sustainable site analyses:

1. Orient and compose the building to take advantage of natural daylighting.

2. Plot shadow patterns from surrounding buildings onto project site to optimize access to daylight.

3. Plot shadow patterns from proposed building(s)/addition on adjacent properties and buildings and consider design options to address impact as necessary.

4. Consider prevailing winds when determining the site and building layout.

5. Take advantage of existing adjacent building and natural land formations and vegetation to provide shelter from extreme weather or to deflect unwanted noise.

6. Design landscaping to mitigate solar gain and winter winds.

7. Identify locations on the roof(s) for potential renewable energy generation.

When sections of the building can be oriented along the east-west axis, the buildings can take advantage of natural daylighting and reduced glare conditions. This can reduce electrical lighting and resultant energy consumption.

By charting shadows on the site at equinox and solstice, the building can be positioned to improve opportunities for natural daylighting and to reduce shading on adjacent properties. A reproduction of sun angle data for New York City’s latitude and longitude is provided here for reference.

In New York City, prevailing winds generally come from the northwest between October and April and from the south/southwest between May and September. The shape of the building or addition can create wind-sheltered spaces. When considering site placement of bus parking, avoid layouts where prevailing winds would blow exhaust into the school air intakes.

Plantings can be used to control light and wind. Plant or protect existing deciduous trees to block summer sun and allow winter solar gain. Plant or protect existing coniferous trees to block winter wind. Planting should be done an adequate distance from the building to prevent moisture retention near the building envelope.

In the future, harvesting renewable energy may become cost effective and roofs could be designed to accommodate renewable energy sources such as photovoltaics and solar domestic hot water. Potential positions for photovoltaic panels should not
be shaded and should be oriented to maximize solar energy collection.

The intent of this last requirement is to identify potential sites for renewable measures but not to modify building infrastructure.

### Schematic Design

**Architect’s Responsibility**
- Submit a narrative summary describing which sustainable analyses are to be carried out.

### Design Development

No credit submittal.

### 60% Construction Documents

**Architect’s Responsibility**
- Submit annotated site plans and sections demonstrating three of the following:
  - The project is designed to take advantage of natural daylighting.
  - The design maximizes opportunities for natural daylighting and minimizes impact on adjacent properties.
  - Provide shadow plots for the site and surrounding buildings for the following times: 9 AM, 12 PM and 3 PM on the 21st of June, September and December.
  - The project is designed to accommodate prevailing winds.
  - The project uses natural features, and/or adjacent buildings, to provide shelter from extreme weather or deflect unwanted noise.
  - The intended or existing plantings increase shade in the summer and allow solar gain in the winter.
  - The project includes locations for potential on-site renewable energy generation sources.

### 100% Construction Documents

**Architect’s Responsibility**
- Submit Certification Form with completed information for this credit.
- Submit updated documentation as necessary.

### References

- NY CHPS Version 1.0 1.1.7
- Sustainable Site & Building Layout
- SCA Design Requirements
  - 1.1.3.1 Feasibility Study
  - 1.3.1.1 Building Location and Orientation
  - 1.3.4.1 Entrances and Exits
  - 2.5.1 Trees, Shrubs, Ground Cover and Lawns
- SCA Standard Specifications
  - None
- SCA Standard Details
  - None
- Other References
  - Sun angle data: http://aa.usno.navy.mil/data/docs/AltAz.html

### Solar Angle Data for New York City

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<thead>
<tr>
<th>Date</th>
<th>Altitude (Φ)</th>
<th>Azimuth (Θ)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jun 21</td>
<td>49.2°</td>
<td>101.2°</td>
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<tr>
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<td>72.7°</td>
<td>182.0°</td>
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<tr>
<td></td>
<td>48.2°</td>
<td>259.9°</td>
</tr>
<tr>
<td>Sep 21</td>
<td>34.7°</td>
<td>125.3°</td>
</tr>
<tr>
<td></td>
<td>49.8°</td>
<td>184.4°</td>
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<tr>
<td></td>
<td>31.0°</td>
<td>239.8°</td>
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<tr>
<td>Dec 21</td>
<td>14.3°</td>
<td>139.4°</td>
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<tr>
<td></td>
<td>25.8°</td>
<td>181.6°</td>
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<tr>
<td></td>
<td>12.7°</td>
<td>223.0°</td>
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Source: U.S. Naval Observatory, Astronomical Applications Department 2006
<table>
<thead>
<tr>
<th>INTENT</th>
<th>REQUIREMENTS</th>
<th>BEST PRACTICES AND IMPLEMENTATION</th>
</tr>
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<tbody>
<tr>
<td>Channel development to urban areas with existing infrastructure, protect green fields and preserve habitat and natural resources. This credit is required, if feasible, for all projects.</td>
<td>Confirm that the project site meets the desired level of community connectivity and development density using one of the following two methods: Option 1 – Community Connectivity Construct or renovate building on a previously developed site that is within a half mile of a residential zone neighborhood with an average density of 10 dwelling units per acre AND within a half mile radius of at least 10 Basic Services AND with pedestrian access between the building and the services. Basic Services include, but are not limited to: 1) Bank; 2) Place of Worship; 3) Convenience Grocery; 4) Day Care; 5) Cleaners; 6) Fire Station; 7) Beauty; 8) Hardware; 9) Laundry; 10) Library; 11) Medical/Dental; 12) Senior Care Facility; 13) Park; 14) Pharmacy; 15) Post Office; 16) Restaurant; 17) Another School or University; 18) Supermarket; 19) Theater; 20) Community Center; 21) Fitness Center; 22) Museum. OR Option 2 – Development Density Construct or renovate building on a previously developed site AND in a community with a minimum building density of 60,000 square feet of gross building area, per acre. (Note: density calculation must include the area of the project being built and is based on a typical two-story downtown development).</td>
<td>All projects should attempt to comply with the requirements of this credit first by using Option 1. If a project site cannot comply with Option 1, then Option 2 must be used. For some sites, compliance with the credit requirements will not be feasible based on the site. The SCA Design Requirement for feasibility studies describes documentation of the requirements for this credit. A suggested tool for documenting compliance with Option 1 above is to use “Make a Map” through myciti.org to help locate basic services around the proposed site. The oasisnyc.net website may also be used for Option 2 to determine lot area and built area for all lots within the prescribed area. After a map is provided, the “Select” and “Lot Info” tools can be used to query information on surrounding lots near the school. Consistent with USGBC Credit Interpretation Rulings park land, bodies of water and single family homes may be excluded from development density calculations. Physical education spaces like athletic fields and playgrounds may be excluded from development density calculations as well.</td>
</tr>
</tbody>
</table>
Schematic Design
Architect’s Responsibility
• Submit a narrative summarizing which documentation method(s) were used and what the results were.
• Submit Development Density & Community Connectivity Form.

Option 1 – Community Connectivity
• Submit documentation that project is on a previously developed site that is within a half mile of a residential zone/neighborhood with an average density of 10 dwelling units per acre.
• Submit a site plan showing a half mile radius, and locating basic services within that radius that have pedestrian access. Drawings, maps and aerial photos can all be used as a basis for plans as long as a scale is provided.
OR
Option 2 – Development Density
• Submit a site vicinity plan showing the project site and the surrounding sites and buildings. Draw the density boundary on the plan, note the drawing scale and assign sequential numbers to each lot within the boundary. Drawings, maps and aerial photos can all be used as a basis for plans as long as a scale is provided.

Design Development
No credit submittal.

60% Construction Documents
No credit submittal.

100% Construction Documents
• Submit Certification Form with completed information for this credit.
• Submit updated documentation as necessary.

Construction
No credit submittal.

References
LEED-NC 2.2 Credit SS 2
Development Density & Community Connectivity

Sca Design Requirements
DR 1.1.3.1 Feasibility Study

Sca Standard Specifications
None

Sca Standard Details
None

Other References
For locating NYC community services:
NYC planning maps and data:
http://www.myciti.org/

For building density information:
http://www.oasisnyc.net/OASISMap.htm

Area plan showing community services within 1/2 mile
Area plan for development density calculations
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.

This credit is required for all projects.

<table>
<thead>
<tr>
<th>INTENT</th>
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</thead>
<tbody>
<tr>
<td>Design appropriate entrances for community use of school facilities such as auditorium, gym, cafeterias, library, and select classrooms for meeting rooms.</td>
<td>The SCA Design Requirements are written to accommodate community use of school spaces such as auditoriums, gyms, cafeterias and, libraries.</td>
<td></td>
</tr>
<tr>
<td>New York City Schools are used actively by the community. Public activities in New York City public schools include: after-school programs, voting, community meetings and provision of emergency services through a long-standing agreement with the Red Cross.</td>
<td>Strategies that contribute to shared use of the school building include configuring entryways, lobbies and spaces for public use to allow for controlled or separate access of spaces likely to be used during and after school hours for community functions.</td>
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<td>Recreational areas and playgrounds are sometimes run as Jointly Operated Playgrounds with the NYC Department of Parks and Recreation.</td>
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S1.5R JOINT USE OF FACILITIES, COMMUNITY ACCESS
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<thead>
<tr>
<th>CREDIT SUBMITTALS</th>
<th>REFERENCES</th>
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</thead>
<tbody>
<tr>
<td><strong>SCHEMATIC DESIGN</strong>&lt;br&gt;No credit submittal.</td>
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<tr>
<td><strong>DESIGN DEVELOPMENT</strong>&lt;br&gt;<strong>ARCHITECT’S RESPONSIBILITY</strong>&lt;br&gt;• Submit a narrative summarizing the design approach for credit compliance and identifying applicable SCA standards to be incorporated into design documents.</td>
<td><strong>NY CHPS Credit 1.1.2</strong>&lt;br&gt;Joint Use of Facilities</td>
</tr>
<tr>
<td><strong>60% CONSTRUCTION DOCUMENTS</strong>&lt;br&gt;<strong>ARCHITECT’S RESPONSIBILITY</strong>&lt;br&gt;• Submit a copy of relevant plan areas annotated to indicate design features incorporated to accommodate community/public use of select places of assembly.</td>
<td><strong>NY CHPS Credit 7.5.2</strong>&lt;br&gt;Community Access</td>
</tr>
<tr>
<td><strong>100% CONSTRUCTION DOCUMENTS</strong>&lt;br&gt;<strong>ARCHITECT’S RESPONSIBILITY</strong>&lt;br&gt;• Submit Certification Form with completed information for this credit.&lt;br&gt;• Submit updated documentation as necessary.</td>
<td><strong>SCA DESIGN REQUIREMENTS</strong>&lt;br&gt;1.3.1.1 Building Location and Orientation&lt;br&gt;1.3.5.1 Cafeteria PK-8 and HS</td>
</tr>
<tr>
<td><strong>CONSTRUCTION</strong>&lt;br&gt;No credit submittal.</td>
<td><strong>SCA STANDARD SPECIFICATIONS</strong>&lt;br&gt;None</td>
</tr>
<tr>
<td><strong>SCA STANDARD DETAILS</strong>&lt;br&gt;None</td>
<td><strong>OTHER REFERENCES</strong>&lt;br&gt;None</td>
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### S1.6 BROWNFIELD REDEVELOPMENT

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<tr>
<th>INTENT</th>
<th>REQUIREMENTS</th>
<th>BEST PRACTICES AND IMPLEMENTATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rehabilitate damaged site where development is complicated by environmental contamination, reducing pressure on undeveloped land.</td>
<td>Confirm project site is: defined as a Brownfield by a New York City, New York State, or federal government agency. <strong>OR</strong> documented as contaminated by means of ASTM E 1903-97 Phase II Environmental Site Assessment Reg. 40CFR Part 763 or a local Voluntary Cleanup Program (such as are sometimes undertaken on school projects under agreements with the New York City Department of Environmental Conservation).</td>
<td>Environmental site assessments are conducted through the SCA/IEH Unit and are typically completed prior to the start of schematic design. Brownfield and site contamination status documentation may be obtained through feasibility report, SCA/IEH Unit or SCA/IEH consultant. SCA school sites are remediated to a residential remediation standard per NYS DEC requirements. This credit is only feasible for projects on Brownfield sites or on sites that require asbestos abatement.</td>
</tr>
</tbody>
</table>

Consistent with USGBC Credit Interpretation Ruling for this credit (available on USGBC web site), contamination by asbestos is addressed by this credit if it is documented with one of the methods indicated above.

Consistent with LEED, there is no minimum required amount of contamination required to achieve this credit. Sites with only minimal amounts of contaminants should not pursue this credit.
SCHEMATIC DESIGN
ARCHITECT’S RESPONSIBILITY
• Submit a narrative summarizing the site’s contamination/Brownfield status. Indicate which entity has declared the site contaminated.
• Attach executive summary level findings on site contamination.

DESIGN DEVELOPMENT
No credit submittal.

60% CONSTRUCTION DOCUMENTS
No credit submittal.

100% CONSTRUCTION DOCUMENTS
ARCHITECT’S RESPONSIBILITY
• Submit Certification Form with completed information for this credit.
• Submit updated documentation as necessary.

CONSTRUCTION
No credit submittal.

REFERENCES
LEED-NC 2.2 Credit SS 3
Brownfield Redevelopment

SCA DESIGN REQUIREMENTS
None

SCA STANDARD SPECIFICATIONS
None

SCA STANDARD DETAILS
None

OTHER REFERENCES
Site cleanup strategies:
www.brownfieldstsc.org

US EPA Brownfield programs:
www.epa.gov/brownfields
### S2.1 ALTERNATIVE TRANSPORTATION, PUBLIC TRANSPORTATION ACCESS

<table>
<thead>
<tr>
<th>INTENT</th>
<th>REQUIREMENTS</th>
<th>BEST PRACTICES AND IMPLEMENTATION</th>
</tr>
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<tbody>
<tr>
<td>Reduce pollution and land development impacts from automobile use.</td>
<td>Option 1: Confirm project site is within a half mile (2,640 feet) of an existing – or planned and funded – commuter rail, light rail or subway station. Distance must be calculated along pedestrian routes, not bird’s eye distance.</td>
<td>Design Teams should review the project Feasibility Study for information relating to documenting this credit.</td>
</tr>
<tr>
<td>This credit is required, if feasible, for all projects.</td>
<td>Option 2: Confirm project site is within one fourth mile (1,320 feet) of one or more stops for two or more public bus lines usable by building occupants. Distance must be calculated along pedestrian routes, not bird’s eye distance.</td>
<td></td>
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OR

Option 2: Confirm project site is within one fourth mile (1,320 feet) of one or more stops for two or more public bus lines usable by building occupants. Distance must be calculated along pedestrian routes, not bird’s eye distance.

---

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

![Project Vicinity Map](image-url)
CREDIT SUBMITTALS

SCHEMATIC DESIGN
ARCHITECT’S RESPONSIBILITY
• Submit a narrative describing whether this credit is feasible.
• Submit a scaled area plan and show all existing and proposed commuter rail, light rail or subway stations within a half mile walk of the site OR all existing bus stops within ¼ mile walk of the site. To indicate compliance, draw a line showing pedestrian path of travel from the site to each station/stop and indicate length of pedestrian path of travel in feet.

DESIGN DEVELOPMENT
No credit submittal.

60% CONSTRUCTION DOCUMENTS
No credit submittal.

100% CONSTRUCTION DOCUMENTS
• Submit Certification Form with completed information for this credit.
• Submit updated documentation as necessary.

CONSTRUCTION
No credit submittal.

REFERENCES

LEED NC 2.2 Credit SS 4.1
Alternate Transportation, Public Transportation Access

SCA DESIGN REQUIREMENTS
DR 1.3.1.1 Building Location and Orientation
DR 1.1.3.1 Feasibility Study

SCA STANDARD SPECIFICATIONS
None

SCA STANDARD DETAILS
None

OTHER REFERENCES
Metropolitan Transportation Authority: http://www.mta.nyc.ny.us/
### Intent
Reduce pollution and land development impacts from automobile use.  
This credit is required for all projects.

### Requirements
Option 1: (Preferred option) Provide no new parking on site (excluding curb parking on public streets). In narrative describe why no new parking is to be provided.

OR

Option 2: For schools with on-site parking (excluding curb parking on public streets), designate 5% of parking spaces provided as preferred parking for alternative transportation vehicles. Preferred parking refers to the parking spots that are closest to the main entrance of the project (exclusive of spaces designated for handicapped). Alternative transportation vehicles include low emitting and fuel efficient vehicles and car pool vehicles. Low-emitting and fuel-efficient vehicles are defined as vehicles that are either classified as Zero Emission Vehicles (ZEV) by the California Air Resources Board or have achieved a minimum green score of 40 on the American Council for an Energy Efficient Economy (ACEEE) annual vehicle rating guide.

### Best Practices and Implementation
NYC schools typically provide no parking except when mandated by the SEQRA Report. Students and teachers typically travel to school by public transportation or walk.

For reference in documenting Option 2, Design Teams should review the project Feasibility Study.
SCHEMATIC DESIGN

ARCHITECT’S RESPONSIBILITY
• Submit narrative indicating which credit requirement option is to be complied with. For Option 1, summarize why no parking is to be provided. For Option 2, indicate how preferred parking is to be accommodated.

DESIGN DEVELOPMENT

ARCHITECT’S RESPONSIBILITY
For projects that will provide parking:
• Show the location(s) of the preferred parking spaces for alternative transportation vehicles.
• Indicate the number of parking spaces required for the project per local code or ordinance.
• Indicate the number of alternative transportation spaces that are provided on-site.

60% CONSTRUCTION DOCUMENTS
No credit submittal.

100% CONSTRUCTION DOCUMENTS
ARCHITECT’S RESPONSIBILITY
• Submit Certification Form with completed information for this credit.
• Submit updated documentation as necessary.

CONSTRUCTION
No credit submittal.

REFERENCES

LEED-NC 2.2 Credit SS 4.3
Alternative Transportation Low Emitting & Fuel-Efficient Vehicles

LEED-NC 2.2 Credit SS 4.4
Alternative Transportation Parking Capacity

SCA DESIGN REQUIREMENTS
DR 1.31.3.1 Feasibility Study
DR 1.3.1.1 Building Location and Orientation

SCA STANDARD SPECIFICATIONS
None

SCA STANDARD DETAILS
None

OTHER REFERENCES
None
### S3.1 SITE DEVELOPMENT, PROTECT OR RESTORE HABITAT

<table>
<thead>
<tr>
<th>INTENT</th>
<th>REQUIREMENTS</th>
<th>BEST PRACTICES AND IMPLEMENTATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conserve existing natural areas and restore damaged areas to provide habitat and promote biodiversity. This credit is required, if feasible, for all projects.</td>
<td>On previously developed or graded sites, restore or protect a minimum of 50% of the site area (excluding the building footprint) with native or adapted vegetation. This credit should only be carried out on sites where there is no conflict between provision of outdoor student recreation space and the credit requirements. Projects earning credit S 1.4 (Development Density and Community Connectivity) may include vegetated roofing areas in the calculations for this credit. Note that vegetated roofing is not an SCA standard and can only be pursued with special direction from the SCA. (See credit A2.1- Option 2.) Where vegetated roofing is included in the calculations for this credit, site area must include the building footprint. This credit is certified in the construction phase so that the final quantity of site area restored is noted following construction activities.</td>
<td>Design Requirements relating to building siting incorporate the requirements of this credit. Specify native/adapted plants that require minimal or no irrigation following establishment. In consultation with the SCA, specify native/adapted plants that require minimal active maintenance by mowing or chemical inputs such as fertilizers, pesticides, herbicide and irrigation, and which provide habitat value and promote biodiversity through avoidance of monoculture plantings. Compliance with this credits requirements will not be feasible for some sites based on existing site conditions and programmatic need for recreational space.</td>
</tr>
</tbody>
</table>

NYC GREEN SCHOOLS GUIDE - ISSUED 3/15/07
SCHEMATIC DESIGN

ARCHITECT’S RESPONSIBILITY

• Submit a narrative describing whether this credit is feasible. For projects where the credit is feasible indicate the design approach for credit compliance and identify the applicable SCA standards to be incorporated into design documents.

DESIGN DEVELOPMENT

ARCHITECT’S RESPONSIBILITY

• Submit a list, in square feet, of the site area, building footprint area and the area, if any, to be restored using native and/or adapted plantings.
• Submit an annotated, scaled site plan identifying graphically the areas listed above if credit is feasible.

60% CONSTRUCTION DOCUMENTS

No credit submittal.

100% CONSTRUCTION DOCUMENTS

No credit submittal.

CONSTRUCTION

ARCHITECT’S RESPONSIBILITY

• Submit Certification Form with completed information for this credit.
• Submit updated documentation as necessary.

REFERENCES

LEED Credit NC 2.2 SS 5.1
Site Development, Protect or Restore Habitat

SCA DESIGN REQUIREMENTS
1.1.3.1 Feasibility Study
1.3.1.1 Building Layout and Orientation

SCA STANDARD SPECIFICATIONS
None

SCA STANDARD DETAILS
None

OTHER REFERENCES
North American Native Plant Society:
www.nanps.org

Native plant directory:
www.plantnative.org

Society for Ecological Restoration International: www.ser.org
## S3.2 SITE DEVELOPMENT, MAXIMIZE OPEN SPACE

<table>
<thead>
<tr>
<th>INTENT</th>
<th>REQUIREMENTS</th>
<th>BEST PRACTICES AND IMPLEMENTATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Provide a high percentage of open space, vegetated green with adapted or native plants or pedestrian-oriented hardscape.</td>
<td>For school sites with no zoning-mandated open space requirements, provide vegetated open space equal to at least 20% of the project’s site area excluding the building footprint. Lawns do not promote biodiversity and do not satisfy the intent of this credit. Native or adapted plants satisfy the intent of this credit.</td>
<td>Design Requirements relating to building siting incorporate the requirements of this credit. Given the high priority of providing opportunities for student recreation and the generally limited size of available urban sites, the number of projects able to achieve this credit will be limited. It is important to note that in the relatively low but dense urban areas where NYC schools are often built, consolidating building mass can have a negative impact on light, air and scale of an adjacent residential neighborhood. These factors should be considered in determining whether this credit should be pursued.</td>
</tr>
<tr>
<td>This credit is required, if feasible, for all projects.</td>
<td>This credit should only be carried out on sites where there is no conflict between provision of outdoor student recreation space and the credit requirements, or on special sites where the SCA has determined to use vegetated roofing. (See credit A2.1 - option 2.)</td>
<td>For projects with large sites, a master plan should be developed, when directed by SCA Design Manager, to minimize site disruption. Strategies on applicable sites include stacking building program, locating parking (when provided) below the facility or sharing facilities with adjacent properties to maximize open space on the site.</td>
</tr>
<tr>
<td></td>
<td>Option 1: For projects located in urban areas that earn S 1.4 (Development Density and Community Connectivity), pedestrian-oriented hardscape areas (i.e., accessible play yards, athletic fields, plazas, courtyards) can contribute to credit compliance if a minimum of 25% of the open space counted is vegetated.</td>
<td>Compliance with this credit’s requirements will not be feasible for some sites based on existing site conditions and programmatic need for recreational space.</td>
</tr>
<tr>
<td></td>
<td>Option 2: For projects located in urban areas that earn S 1.4 (Development Density and Community Connectivity), vegetated roof areas can contribute to credit compliance. Note that vegetated roofing is not an SCA standard and can only be pursued with special direction from the SCA. (See credit A2.1- Option 2.)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Where vegetated roofing is included in the calculations for this credit, site area must include the building footprint.</td>
<td></td>
</tr>
</tbody>
</table>
SCHEMATIC DESIGN
ARCHITECT’S RESPONSIBILITY
• Submit a narrative describing whether this credit is feasible. For projects where the credit is feasible, indicate the design approach for credit compliance and identify the applicable SCA standards to be incorporated into design documents.

DESIGN DEVELOPMENT
ARCHITECT’S RESPONSIBILITY
• Submit the project site area and building footprint area (in square feet).
• Submit a plan highlighting the dedicated vegetated open space and/or pedestrian oriented hardscape.
• Include the area of open space required by local zoning codes-regulations.
• Include the area of the vegetated dedicated open space provided by the project.

60% CONSTRUCTION DOCUMENTS
No credit submittal.

100% CONSTRUCTION DOCUMENTS
ARCHITECT’S RESPONSIBILITY
• Submit Certification Form with completed information for this credit.
• Submit updated documentation as necessary.

CONSTRUCTION
No credit submittal.

REFERENCES
LEED-NC 2.2 Credit SS 5.2
Site Development Maximize Open Space

SCA DESIGN REQUIREMENTS
1.1.3.1 Feasibility Study
1.3.1.1 Building Layout and Orientation

SCA STANDARD SPECIFICATIONS
None

SCA STANDARD DETAILS
None

OTHER REFERENCES
None
### S4.1 STORMWATER DESIGN, QUALITY CONTROL

<table>
<thead>
<tr>
<th>INTENT</th>
<th>REQUIREMENTS</th>
<th>BEST PRACTICES AND IMPLEMENTATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reduce or eliminate water pollution by reducing impervious cover, increasing on-site infiltration, eliminating sources of contaminants and removing suspended solids from stormwater runoff. This credit is required, if feasible, for all projects.</td>
<td>Implement a stormwater management plan that reduces impervious cover, promotes infiltration and captures and treats the stormwater runoff from 90% of the average annual rainfall using acceptable best management practices (BMPs). BMPs used to treat runoff must be capable of removing 80% of the average annual post development total suspended solids (TSS) load based on existing monitoring reports. TSS are particles in a water sample that are of a size and weight that do not settle out of stormwater by gravity but would require filtering. BMPs are considered to meet these criteria if they are designed in accordance with standards and specifications from a state or local program that has adopted these performance standards.</td>
<td>This credit is likely to apply to sites that must meet State Pollutant Discharge Elimination System (SPDES) requirements regarding stormwater quantity and quality control (sites greater than one acre with separate storm sewer systems and located in a Total Maximum Daily Load (TMDL) watershed or discharging to an impaired 303(d) listed water body). For projects that must comply with SPDES, the Design Team must develop documents and file the stormwater pollution prevention plan (SWPPP) with DEC. If requested by the SCA, use alternative surfaces and pursue Credit A 2.2 (e.g., vegetated green roofs, permeable pavement or grid pavers) and non-structural techniques (e.g., rain gardens, vegetated swales, disconnection of imperviousness, rainwater recycling) to reduce imperviousness and promote infiltration, thereby reducing pollutant loadings.</td>
</tr>
</tbody>
</table>
CREDIT SUBMITTALS

SCHEMATIC DESIGN
No credit submittal.

DESIGN DEVELOPMENT
ARCHITECT AND CIVIL ENGINEER’S RESPONSIBILITY
• Submit a narrative describing whether this credit is applicable/feasible.
For projects where it is applicable summarize the design approach for credit compliance and identify applicable SCA standards to be incorporated into design documents.

60% CONSTRUCTION DOCUMENTS
ARCHITECT AND CIVIL ENGINEER’S RESPONSIBILITY

Non-Structural Controls
• Submit a list of Best Management Practices (BMPs), including a description of the function of each BMP and the percent of annual rainfall treated.

Structural Controls
• Submit a list of structural controls, including a description of the pollutant removal of each control and the percent of annual rainfall treated.
AND
• Include any special circumstances or considerations regarding the approach to the credit.

100% CONSTRUCTION DOCUMENTS
ARCHITECT AND CIVIL ENGINEER’S RESPONSIBILITY
• Submit Certification Form with completed information for this credit.
• Submit updated documentation as necessary.

CONSTRUCTION
No credit submittal.

REFERENCES

LEED-NC 2.2 Credit SS 6.2
Stormwater Design Quality Control

SCA DESIGN REQUIREMENTS
6.1.11 Stormwater Management

SCA STANDARD SPECIFICATIONS
02723 Storm Damage Systems

SCA STANDARD DETAILS
None

OTHER REFERENCES
NYS Instruction Manual for Stormwater Construction Manual:
http://www.dec.state.ny.us/website/dow/toolbox/instr_man.pdf

NYS Stormwater Management Design Manual Stormwater Permit Requirements Chapter:
http://www.dec.state.ny.us/website/dow/toolbox/swmanual/nysswmdm03.pdf
### S5.1R LIGHT POLLUTION REDUCTION

<table>
<thead>
<tr>
<th>INTENT</th>
<th>REQUIREMENTS</th>
</tr>
</thead>
</table>
| Minimize light trespass from the building and site, reduce sky-glow to increase night sky access, improve nighttime visibility through glare reduction and reduce development impact on nocturnal environments. | FOR INTERIOR LIGHTING
All non-emergency interior lighting shall be automatically controlled to turn off when the school is not in operation with manual override capability for after-hours use.

OR
The angle of maximum candela from each luminaire as located in the building shall intersect opaque building interior surfaces and not exit through windows.

FOR EXTERIOR LIGHTING
Illuminate areas only as required for safety and comfort. Do not exceed 80% of the lighting power densities for exterior and 50% for building facades and landscape features as defined in ANSI/ASHRAE/IESNA Standard 90.1-2004, Exterior Lighting Section, without amendments. All projects shall be classified under one of the following zones, as defined in IESNA RP-33-1999, and shall follow the requirements for that specific zone:

LZ1 – Dark (Park and Rural Settings)
Design exterior lighting so that all site and building mounted luminaries produce a maximum initial illuminance value no greater than 0.01 horizontal and vertical footcandles at the site boundary and beyond. Document that 0% of the total initial designed fixture lumens are emitted at an angle of 90 degrees or higher than nadir.

LZ2 – Low (Residential Area)
Design exterior lighting so that all site and building mounted luminaries produce a maximum initial illuminance value no greater than 0.10 horizontal and vertical footcandles at the site boundary and no greater than 0.01 horizontal footcandles 10 feet beyond the site boundary. Document that no more than 2% of the total initial designed fixture lumens are emitted at an angle of 90 degrees or higher from nadir (straight down). For site boundaries that abut public rights-of-way, light trespass requirements may be met relative to the curb line instead of the site boundary.

LZ3 – Medium (Commercial/Industrial, High-Density Residential)
Design exterior lighting so that all site and building mounted luminaries produce a maximum initial illuminance value no greater than 0.20 horizontal and vertical foot-candles at the site boundary and no greater than 0.01 horizontal foot-candles 15 feet beyond the site. Document that no more than 10% of the total initial designed fixture lumens are emitted at an angle of 90 degrees or higher from nadir (straight down). For site boundaries that abut public rights-of-way, light trespass requirements may be met relative to the curb line instead of the site boundary.

LZ4 – High (Major City Centers, Entertainment Districts)
Design exterior lighting so that all site and building mounted luminaries produce a maximum initial illuminance value no greater than 0.60 horizontal and vertical foot-candles at the site boundary and no greater than 0.01 horizontal foot-candles 15 feet beyond the site. Document that no more than 10% of the total initial designed site lumens are emitted at an angle of 90 degrees or higher from nadir (straight down). For site boundaries that abut public rights-of-way, light trespass requirements may be met relative to the curb line instead of the site boundary.

This credit is required for all projects.

FOR INTERIOR LIGHTING
All non-emergency interior lighting shall be automatically controlled to turn off when the school is not in operation with manual override capability for after-hours use.

OR
The angle of maximum candela from each luminaire as located in the building shall intersect opaque building interior surfaces and not exit through windows.

FOR EXTERIOR LIGHTING
Illuminate areas only as required for safety and comfort. Do not exceed 80% of the lighting power densities for exterior and 50% for building facades and landscape features as defined in ANSI/ASHRAE/IESNA Standard 90.1-2004, Exterior Lighting Section, without amendments. All projects shall be classified under one of the following zones, as defined in IESNA RP-33-1999, and shall follow the requirements for that specific zone:

LZ1 – Dark (Park and Rural Settings)
Design exterior lighting so that all site and building mounted luminaries produce a maximum initial illuminance value no greater than 0.01 horizontal and vertical footcandles at the site boundary and beyond. Document that 0% of the total initial designed fixture lumens are emitted at an angle of 90 degrees or higher than nadir.

LZ2 – Low (Residential Area)
Design exterior lighting so that all site and building mounted luminaries produce a maximum initial illuminance value no greater than 0.10 horizontal and vertical footcandles at the site boundary and no greater than 0.01 horizontal footcandles 10 feet beyond the site boundary. Document that no more than 2% of the total initial designed fixture lumens are emitted at an angle of 90 degrees or higher from nadir (straight down). For site boundaries that abut public rights-of-way, light trespass requirements may be met relative to the curb line instead of the site boundary.

LZ3 – Medium (Commercial/Industrial, High-Density Residential)
Design exterior lighting so that all site and building mounted luminaries produce a maximum initial illuminance value no greater than 0.20 horizontal and vertical foot-candles at the site boundary and no greater than 0.01 horizontal foot-candles 15 feet beyond the site. Document that no more than 10% of the total initial designed fixture lumens are emitted at an angle of 90 degrees or higher from nadir (straight down). For site boundaries that abut public rights-of-way, light trespass requirements may be met relative to the curb line instead of the site boundary.

LZ4 – High (Major City Centers, Entertainment Districts)
Design exterior lighting so that all site and building mounted luminaries produce a maximum initial illuminance value no greater than 0.60 horizontal and vertical foot-candles at the site boundary and no greater than 0.01 horizontal foot-candles 15 feet beyond the site. Document that no more than 10% of the total initial designed site lumens are emitted at an angle of 90 degrees or higher from nadir (straight down). For site boundaries that abut public rights-of-way, light trespass requirements may be met relative to the curb line instead of the site boundary.

This credit is required for all projects.
Adopt site lighting criteria to maintain safe light levels while avoiding off-site lighting and night sky pollution. Minimize site lighting where possible and model the site lighting using a computer model.

Technologies to reduce light pollution include full cutoff luminaries, low-reflectance surfaces and low-angle spotlights.

Note that exterior lighting for playing fields is not required to comply with the requirements of this credit per ASHRAE 90.1-2004 Section 9.4.5, exemption C.

SCHEMATIC DESIGN
No credit submittal.

DESIGN DEVELOPMENT
ENGINEER’S RESPONSIBILITY
• Submit a narrative summarizing the design approach for credit compliance and identifying applicable SCA standards to be incorporated into design documents. Indicate site zone classification for the project.

60% CONSTRUCTION DOCUMENTS
For projects where all non-emergency interior lighting within the scope of the project will not be automatically controlled to turn off when the school is not in operation:
• Submit typical classroom plan indicating that the angle of maximum candela from classroom luminaires do not exit classroom windows.

100% CONSTRUCTION DOCUMENTS
ENGINEER’S RESPONSIBILITY
• Submit Certification Form with completed information for this credit.
• Submit the Light Pollution Reduction Form A - Site Lumen Calculation Form.
• Submit Light Pollution Reduction Form B - Lighting Power Density (LPD) for both exterior site lighting and façade/landscape lighting.
• Submit a narrative description of the results of light trespass analysis including the highest quantities of horizontal and vertical footcandles at the site boundary and at 10 feet beyond site boundary for LZ2 and 15 feet beyond for LZ3 and LZ4.

CONSTRUCTION
No credit submittal.

REFERENCES
LEED-NC 2.2 Credit SS 8
Light Pollution Reduction
ANSI/ASHRAE/IESNA Standard 90.1-2004
SCA DESIGN REQUIREMENTS
7.2.1 Interior Lighting
7.2.5 Exterior / Site / Security Lighting
7.2.6 Athletic Fields / Sports Lighting
SCA STANDARD SPECIFICATIONS
16500 Interior Building Lighting
16501 Lamps, Ballasts, and Accessories
16520 Exit Sign Lights and Emergency Lighting Fixtures and Systems
16530 Site/Security Lighting
SCA STANDARD DETAILS
None
OTHER REFERENCES
None
SCA projects will achieve potable water use reduction through the use of water-conserving fixtures and reduction or elimination of irrigation for landscaping.

By reducing potable water use, the demands on sanitary sewage treatment infrastructure and facilities will be minimized.
### INTENT

Limit or eliminate the use of potable water, or other natural surface or subsurface water resources on or near the site, for landscape irrigation.

This credit is required for all projects.

### REQUIREMENTS

Option 1 (Preferred): Perform a soil/climate analysis to determine appropriate plant material and design the landscape with native or adapted plants to eliminate irrigation requirements. Temporary irrigation systems used for plant establishment are allowed only if removed within one year of installation.

OR

Option 2: On projects that use irrigation, reduce potable water consumption for irrigation by 50% from a calculated mid-summer baseline case. Reductions may be attributed to any combination of the following items:

- Plant species factor
- Irrigation efficiency
- Use of captured rainwater
- Use of recycled wastewater
- Use of water treated and conveyed by a public agency specifically for non-potable uses

Irrigation efficiency may be achieved through use of: high-efficiency equipment, climate-based controllers, soil moisture meters.

Note that for this option, calculations are required to indicate how potable water use is reduced by 50%. See the LEED-NC 2.2 Reference Guide for a description of calculations.
The SCA Design Requirements require use of native or adapted plants with no permanent irrigation system at landscaped areas. Provide hose bibb(s) which may be used for temporary irrigation. In addition, the SCA’s standard for athletic fields is artificial turf, which requires no irrigation.

Design Teams must receive approval from the SCA to pursue this credit using Option 2 because of the potential costs involved. On the atypical project where it is determined to utilize an irrigation system, one option to consider is the use of captured rainwater or stormwater.

For sites that use stormwater tanks and filtration systems to meet State Pollution Discharge Elimination System (SPDES) requirements, the stormwater system may be modified with SCA permission to allow use of captured rainwater for irrigation.

**DESIGN DEVELOPMENT**

**ARCHITECT AND CIVIL ENGINEER’S RESPONSIBILITY**

- Submit a narrative summarizing the design approach for credit compliance and identifying applicable SCA standards to be incorporated into design documents.
- Submit a narrative indicating whether the project is atypical and the Design Team recommends an irrigation system for this project. If so, indicate potable water use reduction techniques.

**60% CONSTRUCTION DOCUMENTS**

**ARCHITECT AND CIVIL ENGINEER’S RESPONSIBILITY**

- Incorporate native or adapted plants in landscaping specifications.
- If irrigation is to be provided, submit documentation as required for contract specifications and commissioning of irrigation systems. Incorporate requirements in specifications.
- Submit potable water use calculations per LEED-NC 2.2 Reference Guide, if an irrigation system is to be provided.

**100% CONSTRUCTION DOCUMENTS**

**ARCHITECT AND CIVIL ENGINEER’S RESPONSIBILITY**

- Submit Certification Form with completed information for this credit.
- Submit updated documentation as necessary.

**CONSTRUCTION**

No credit submittal.

LEED-NC 2.2 Credit WE 1.1 Water Efficient Landscaping Reduce by 50%

SCA DESIGN REQUIREMENTS

DR 2.5.1 Trees, Shrubs, Ground Cover and Lawns

SCA STANDARD SPECIFICATIONS

02900 Landscaping

SCA STANDARD DETAILS

None
### WATER EFFICIENT LANDSCAPING, NO POTABLE WATER USE OR NO IRRIGATION

<table>
<thead>
<tr>
<th>INTENT</th>
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<th>BEST PRACTICES AND IMPLEMENTATION</th>
</tr>
</thead>
</table>
| Eliminate the use of potable water, or other natural surface or subsurface water resources available on or near the project site, for landscape irrigation. This credit is required for all projects. | Option 1 (preferred): Perform a soil/climate analysis to determine appropriate plant material and design the landscape with native or adapted plants to eliminate irrigation requirements. Temporary irrigation systems used for plant establishment are allowed only if removed within one year of installation.  
OR  
Option 2: On projects that use irrigation, use only captured rainwater, recycled wastewater or recycled graywater for landscape irrigation. The use of potable water for permanent irrigation is not permitted for projects pursuing this credit.  
Note that for this option, calculations are required to indicate how no use of potable water is achieved. See the LEED-NC 2.2 Reference Guide for a description of calculations. | The SCA Design Requirements require use of native or adapted plants with no permanent irrigation system at landscaped areas. Provide hose bibb(s) for temporary irrigation. In addition, the SCA’s standard for athletic fields is artificial turf, which requires no irrigation.  
Design Teams must receive approval from the SCA to pursue this credit using Option 2 because of the potential costs involved. On the atypical project where it is determined to utilize an irrigation system, one option to consider is the use of captured rainwater or stormwater.  
For sites that use stormwater tanks and filtration systems to meet State Pollution Discharge Elimination System (SPDES) requirements, the stormwater system may be modified with SCA permission to allow use of captured rainwater for irrigation. |
DESIGN DEVELOPMENT
ARCHITECT, LANDSCAPE ARCHITECT OR CIVIL ENGINEER’S RESPONSIBILITY
• Submit a narrative summarizing the design approach for credit compliance and identifying applicable SCA standards to be incorporated into design documents.
• Submit a narrative indicating whether the project is atypical and the Design Team recommends an irrigation system for this project. If so, indicate potable water use elimination techniques.

60% CONSTRUCTION DOCUMENTS
ARCHITECT, LANDSCAPE ARCHITECT OR CIVIL ENGINEER’S RESPONSIBILITY
• Incorporate native or adapted plants in landscaping specifications.
• If irrigation is to be provided, submit documentation as required for contract specifications and commissioning of irrigation systems. Incorporate requirements in specifications.
• Submit potable water use calculations per LEED-NC 2.2 Reference Guide if an irrigation system is to be provided.

100% CONSTRUCTION DOCUMENTS
ARCHITECT AND CIVIL ENGINEER’S RESPONSIBILITY
• Submit Certification Form with information completed for this credit.
• Submit updated documentation as necessary.

CONSTRUCTION
No credit submittal.

REFERENCES
LEED-NC 2.2 Credit WE 1.2
Water Efficient Landscaping, No Potable Water Use or No Irrigation

SCA DESIGN REQUIREMENTS
DR 2.5.1 Trees, Shrubs, Ground Cover and Lawns

SCA STANDARD SPECIFICATIONS
02900 Landscaping

SCA STANDARD DETAILS
None
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 W2.1R, W2.2R and W2.3R.

Projected Water Use Reduction for Typical IS/HS

For major school modernizations and renovations of leased building sites there may be atypical projects that, 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 references LEED 2.1, the rules for implementing LL86/05 clarify that the current version of LEED should be the reference.
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, if their use is approved by the NYC Department of Buildings. 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 atypical projects that cannot achieve the 40% water use 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 buildings where not all fixtures are to be replaced.

In modernization projects existing fixtures that are to remain must be included in the design case calculations with their actual flow rate and an indicated assumption about percentage of occupant users for those fixtures.

The above would also apply to addition/modernizations where the addition is over 50% of the size of the building being enlarged.

**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 1.1
  - Innovation Credit
- Local Law 86/05
- SCA DESIGN REQUIREMENTS
  - 6.1.16 Compliance with LL86/05
- SCA STANDARD SPECIFICATIONS
  - 15440 Plumbing Fixtures
- SCA STANDARD DETAILS
  - None

**BEST PRACTICES AND IMPLEMENTATION**

- **DESIGN DEVELOPMENT**
  - **ENGINEER’S RESPONSIBILITY**
    - Submit a narrative summarizing the design approach for credit compliance and identifying applicable SCA standards to be incorporated into design documents.

- **60% CONSTRUCTION DOCUMENTS**
  - **ENGINEER’S RESPONSIBILITY**
    - Submit Water Use Reduction Form.
    - Incorporate fixtures per Standard Specifications.

- **100% CONSTRUCTION DOCUMENTS**
  - **ENGINEER’S RESPONSIBILITY**
    - Submit Certification Form with completed information for this credit.
    - Submit updated documentation as necessary.
    - Submit LL 86/05 Form with water use reduction information.

**CONSTRUCTION**

No credit submittal.

**CREDIT SUBMITTALS**

Waterless Urinal

- Replaceable Cartridge allows urine to flow through sealant
- Displacement Fluid is lighter than water and seals trap
- Urine is 97% water
- “You don’t need water to transport water” - Klaus Reichardt

**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 1.1
  - Innovation Credit
- Local Law 86/05
- SCA DESIGN REQUIREMENTS
  - 6.1.16 Compliance with LL86/05
- SCA STANDARD SPECIFICATIONS
  - 15440 Plumbing Fixtures
- SCA STANDARD DETAILS
  - None

**BEST PRACTICES AND IMPLEMENTATION**

- **DESIGN DEVELOPMENT**
  - **ENGINEER’S RESPONSIBILITY**
    - Submit a narrative summarizing the design approach for credit compliance and identifying applicable SCA standards to be incorporated into design documents.

- **60% CONSTRUCTION DOCUMENTS**
  - **ENGINEER’S RESPONSIBILITY**
    - Submit Water Use Reduction Form.
    - Incorporate fixtures per Standard Specifications.

- **100% CONSTRUCTION DOCUMENTS**
  - **ENGINEER’S RESPONSIBILITY**
    - Submit Certification Form with completed information for this credit.
    - Submit updated documentation as necessary.
    - Submit LL 86/05 Form with water use reduction information.

**CONSTRUCTION**

No credit submittal.

**CREDIT SUBMITTALS**

Waterless Urinal

- Replaceable Cartridge allows urine to flow through sealant
- Displacement Fluid is lighter than water and seals trap
- Urine is 97% water
- “You don’t need water to transport water” - Klaus Reichardt
Energy efficient schools that are properly commissioned will reduce their environmental impact and operational costs while improving indoor air quality. Efficient design saves money while conserving non-renewable energy resources and reduces atmospheric emissions of pollutants and greenhouse gases. Efficient designs include properly sized equipment and systems while providing the required heating, cooling and ventilation.

The Quality Assurance function of commissioning has always played an important role at the SCA. In recognition of the increasing importance of commissioning, it is now recognized in a separate plan. Commissioning, maintenance and training are vitally important to the performance of the school and to the proper operation of its systems, and are critical to maintaining energy efficiency.

The SCA has investigated various HVAC systems using computerized energy modeling to conform to the requirements of New York City LL86/05. Mandated requirements exceed minimum code and LEED 2.1 energy requirements. The selected HVAC system design and other conservation measures achieve an optimal balance between energy savings, required performance and cost. These systems are a critical part of an integrated building design approach. It is the intent of the SCA to design and construct energy efficient buildings that conform to its building design standards to consistently provide a high-quality educational environment for students, teachers, administrators and operating staff.
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.

The benefits of the added oversight 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

This credit is required for all projects.

The SCA/DOE system of whole building commissioning goes well beyond LEED requirements for commissioning. SCA/DOE whole building commissioning is described in the SCA/DOE commissioning policies and procedures, and in related SCA Design Requirements and Standard Specifications.

Below are the commissioning requirements to be carried out under whole building commissioning that are specifically required to comply with this rating system.

Commissioning requires the cooperative efforts of the owner, the Commissioning Authority (CxA), the Design Team and Contractor.

The SCA/DOE commissioning authority shall:
- Have documented commissioning authority experience on at least two projects, be independent of the project’s design and construction management team, and be a qualified employee or consultant of the owner.
- Report results, findings and recommendations directly to the owner.
- Review the Owner’s Project Requirements (OPR) and the Design Team’s Basis of Design (BOD) for clarity and completeness.
- Conduct a design review of the OPR, BOD and DD documents.
- Conduct reviews of 60% and 100% submissions to confirm that commissioning comments have been addressed.

- Review Contractor submittals applicable to HVAC, lighting controls, domestic hot water systems, fire alarm system and emergency generator for compliance with the OPR and BOD. This review shall be concurrent with A/E reviews and submitted to the Design Team and owner.
- Review systems manual developed by Contractor that provides future operating staff the information needed to understand and optimally operate the commissioned systems.
- Verify the installation and performance of the HVAC, lighting controls, domestic hot water systems, fire alarm system and emergency generator.
- Verify that operating personnel training has occurred.
- Review building operation with custodial and administrative staff within 10 months after substantial completion. Include a plan for resolution of outstanding commissioning-related issues.
- Complete a summary commissioning report.

The Design Team shall complete the following aspects of commissioning:
- Develop and incorporate commissioning requirements into the construction documents.
- Modify the standard SCA/DOE School Commissioning Matrix for the specific project for review by the CxA.

The OPR consist of the DOE Program of Requirements for the specific project and the SCA Design Requirements. The BOD consists of the Schematic Design report. The owner and Design Team are responsible for updates to their respective documents.
The SCA/DOE in-house commissioning group consists of staff from the SCA QA/QC Department and the Division of School Facilities (DSF). An individual CxA will be assigned to a project from this group.

This group develops and maintains a standard School Commissioning Plan and Plan Matrix. Design Teams modify this Plan Matrix to be project specific. The Design Team’s must advise the commissioning agent if a building system or feature incorporated in the design is not on the standard Matrix.

Commissioning requirements are included through the SCA Standard Specifications.

For the 100% design submission, the Design Team must update the matrix and BOD as required. During construction, the Design Team reviews commissioning-related submittals including as-built documents and operating & maintenance manuals. The Design Team also provides technical support to the commissioning agent as required to address deficient or varying field conditions.

The Contractor’s responsibilities as outlined in the Standard Specifications include:
• Submitting a copy of the project specific Commissioning Plan (developed by the SCA with design team input) that has been signed by the Contractor, sub-Contractors and vendors acknowledging responsibility for commissioning items.
• Attending commissioning meetings.
• Performing testing of systems according to contract requirements.

**LEED-NC 2.2 Credit EA Pr 1**
Fundamental Commissioning of the Building Energy Systems

**LEED-NC 2.2 Credit EA 3 – Enhanced Commissioning**

**NY CHPS Version 1.0 Credit 3.3.1**
Third Party Commissioning

**SCA DESIGN REQUIREMENTS**
None

**SCA STANDARD SPECIFICATIONS**
S01650 Facility Start-up, Demonstration, and Training
S01660 Commissioning
References to Commissioning throughout specifications.

**SCA STANDARD DETAILS**
None

**OTHER REFERENCES**
None

**REFERENCES**

**DESIGN DEVELOPMENT**

**ARCHITECT AND ENGINEER’S RESPONSIBILITY**
• Submit narrative summarizing standards to be incorporated and description(s) of building systems not included in the Standard School Commissioning Matrix.
• Submit School Commissioning Matrix modified for particular project.

**COMMISSIONING AGENT’S RESPONSIBILITY**
• Review narrative and matrix submitted with the DD submission, OPR, BOD and design development documents.

**60% CONSTRUCTION DOCUMENTS**
• None

**100% CONSTRUCTION DOCUMENTS**

**COMMISSIONING AGENTS RESPONSIBILITY**
• Review matrix, BOD and construction documents.

**CONSTRUCTION**

**COMMISSIONING AGENT’S RESPONSIBILITY**
• Submit Certification Form with completed information for this credit.

For the five systems indicated:
• Submit review of Contractor submittals for compliance with the OPR and BOD. This review to be concurrent with A/E review and to be provided to A/E as well as the Contractor.
• Review systems manual submitted by Contractor. Submit recommended schedule of maintenance requirements and frequency as required.
• Verify the installation and performance of these systems.
• Verify that operating personnel training has occurred.
Reduce ozone depletion.
This credit is required for all projects.

1. No CFC-based refrigerants shall be used in new base building equipment for heating, ventilation, air conditioning and refrigeration systems (HVAC&R).

2. For modernization projects existing base building HVAC equipment containing CFC-based refrigerants must not be re-used; non-CFC systems shall be used in replacement equipment.

3. Select refrigerants and HVAC&R equipment that minimizes or eliminates the emission of compounds that contribute to ozone depletion and global warming. See LEED Credit EA 4 Table 1 summarizing ozone depleting potential and global warming potential of various refrigerants.

4. Complete project specific average Refrigerant Atmosphere Impact Form following example calculation 1 under LEED Credit EA 4 to indicate compliance with this credit. Enter the number and size of units and selected refrigerant. Projects must comply with maximum threshold for the combined contributions to ozone depletion and global warming potentials.

For a detailed explanation of these calculations, see LEED-NC 2.2 Reference Guide Credit EA4 Enhanced Refrigerant Management Ozone Depletion for comparison tables regarding: ozone depletion and global warming potentials of specific refrigerants, cooling efficiency of various refrigerants and equipment life span.

5. Incorporate SCA standard “non-CFC” equipment specifications in design and construction documents.
HVAC&R-based equipment and refrigerants referenced in the SCA standards do not use CFC based refrigerants. Utilize fire suppression systems that do not contain HCFCs or Halons.

**DESIGN DEVELOPMENT**

**HVAC ENGINEER’S RESPONSIBILITY**
- Submit a narrative summarizing how compliance will be achieved. For modernizations/renovations describe scope relating to existing base building HVAC equipment that contains CFC refrigerants.

**60% CONSTRUCTION DOCUMENTS**

**HVAC ENGINEER’S RESPONSIBILITY**
- Submit a Refrigerant Impact Form.
- For modernizations/renovations, submit an inventory of existing HVAC&R equipment currently using CFC-based refrigerants that are to be removed.

**100% CONSTRUCTION DOCUMENTS**

**HVAC ENGINEER’S RESPONSIBILITY**
- Submit Certification Form with completed information for this credit.
- Submit updated documentation as necessary.

**CONSTRUCTION**

No credit submittal.

**REFERENCES**

LEED-NC 2.2 Credit EA Pr 3
Fundamental Refrigerant Management

LEED-NC 2.2 Credit EA 4
Enhanced Refrigerant Management
Ozone Depletion

**SCA DESIGN REQUIREMENTS**

None

**SCA STANDARD SPECIFICATIONS**

11400  Food Service Equipment
11450  Domestic Type Equipment
11452  Culinary Art Lab & Equipment
13031  Walk-in Trash Refrigerator
15650  Refrigeration
15781  Packaged Heating and Cooling Units
15783  Split Heat Pump System
15853  Custom Packaged Rooftop Heating and Cooling Units (Variable Air Volume System)
15854  Custom Packaged Rooftop Heating and Cooling Units (Constant Volume System)
15855  Commercial Packaged Rooftop Heating and Cooling Units
15858  Window Air Conditioners

**SCA STANDARD DETAILS**

None

**OTHER REFERENCES**

None
<table>
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<tr>
<td>Provide for the ongoing measurement and accountability of building energy consumption over time.</td>
<td>1. Design and install a sub-metering system, based on SCA standards, for measuring major fuel and energy usage by the domestic hot water heater, building heating and cooling equipment, as well as major electrical loads including lighting loads, roof-top HVAC units, boilers and chillers. Integrate the data collection and monitoring into the Building Management System (BMS), providing for the monitoring, display, calculation, reporting and trend-logging of the fuel and energy usage.</td>
<td>The SCA standards require a system for measurement and verification. The SCA systems incorporate sensors, sub-meters and instrumentation, as well as a Building Management System that provides the energy information in a useful manner to the operator. Some specific elements included in the SCA standards are gas flow meters for heating equipment and domestic hot water heaters, and watt-meters at lighting panels to monitor significant lighting loads such as in the Auditorium and Gymnasium.</td>
</tr>
<tr>
<td>This credit is required for all projects.</td>
<td>2. The Measurement and Verification (M&amp;V) system must be designed to allow for comparing predicted performance to actual performance, broken down by component or system as appropriate. Furthermore, the M&amp;V system is intended to be used past the warranty period functioning as a diagnostic tool for the facility operators to diagnose specific equipment operation. The M&amp;V system must be designed to allow for comparing period-to-period performance, broken down by component or system as appropriate.</td>
<td>The SCA standard for predicting the baseline energy performance for new buildings shall be the International Performance Measurement &amp; Verification Protocol (IPMVP) Volume III Option C: Whole Building Comparison. Option C involves the use of utility meters and/or aggregated sub-meters to determine the Post-Construction Energy use of the facility at the whole-building level. The Projected Baseline Energy use is the energy use of a proto-typical school building that was modeled and then validated with a “control group” of similar buildings without the Energy Conservation Measures (ECMs) or design enhancements. In this regard, the Projected Baseline Energy use is a stipulation.</td>
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<td></td>
<td>3. Incorporate the M&amp;V system in the design and construction documents.</td>
<td>The SCA believes Option C is appropriate to NYC public schools due to the great similarities between school systems for HVAC, lighting, electric and domestic water heating, and the fact that construction practices of the SCA are standardized and that the locations of the NYC schools are similar.</td>
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</table>
This credit involves criteria relating to the implementation of the Measurement and Verification System for a period of no less than one year of post-construction occupancy. The DOE/Division of School Facilities will use the system to monitor energy performance and alert staff that equipment maintenance is required. Energy system performance will be evaluated when LL86/05 annual reports are submitted to the Mayor’s Office of Operations.

Design Teams and Contractors participate with the SCA commissioning agent and the Facilities Management System Integrator to verify that the BMS system meets the owners M&V requirements, the requirements of this credit and the design intent.

**DESIGN DEVELOPMENT**

**HVAC ENGINEER’S RESPONSIBILITY**

- Submit a narrative summarizing the design approach for credit compliance and identifying applicable SCA standards to be incorporated in the design documents. Identify any potential departures from SCA standards relating to this credit.

**60% CONSTRUCTION DOCUMENTS**

**HVAC ENGINEER’S RESPONSIBILITY**

- Include Specification Sections 15970, 15973 and 15985 in the construction document submittal modified as appropriate for the specific school project.

**100% CONSTRUCTION DOCUMENTS**

No credit submittal.

**CONSTRUCTION**

**HVAC ENGINEER’S RESPONSIBILITY**

- Submit Certification Form with completed information for this credit.
- Submit updated documentation as necessary.

**REFERENCES**

LEED-NC 2.2 Credit EA 5– Measurement & Verification

NY CHPS 3.3.8 - Submetering Submetering

SCA DESIGN REQUIREMENTS

6.2.20 Building Management Control System / Direct Digital Control BMS/ DDC Measurement and Verification Plan Requirements

SCA STANDARD SPECIFICATIONS

15970 Temperature Control System (LonWorks BMS/DDC With School Operating Console)
15973 Facility Management Systems Integration
15985 Sequence of Operations

SCA STANDARD DETAILS

SCA BMS Control Diagrams

OTHER REFERENCES

Local Law 86/05

**E2.2R**  
**ENERGY MANAGEMENT SYSTEM CONTROLS, HVAC AND HOT WATER**

<table>
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<tr>
<td>While Building Management Systems (BMSs) are typically installed with new HVAC systems, care must be taken to specify and install an appropriate system for the school and its maintenance staff. This credit is required for all projects.</td>
<td>1. Provide for design and installation of an open protocol Building Management System in compliance with SCA Design Standards. Open protocol systems are systems that use published/non-proprietary protocols, open to all manufacturers. The SCA current standard is the LonWorks open protocol system by Echelon.</td>
<td>The SCA standardized specification sections for school Building Management System controls for HVAC systems are consistent with the requirements of this credit. The BMS system should be fully commissioned. (See credit E1.1R in this section regarding commissioning.)</td>
</tr>
<tr>
<td>2. Incorporate the BMS in the design and construction documents.</td>
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</table>
DESIGN DEVELOPMENT

HVAC ENGINEER’S RESPONSIBILITY
• Submit a narrative summarizing the design approach for credit compliance and identifying applicable SCA standards to be incorporated in the design documents. Identify any potential departures from SCA standards relating to this credit.

60% CONSTRUCTION DOCUMENTS

HVAC ENGINEER’S RESPONSIBILITY
• Incorporate the BMS specifications and control diagrams into construction documents.

100% CONSTRUCTION DOCUMENTS

HVAC ENGINEER’S RESPONSIBILITY
• Submit Certification Form with completed information for this credit.
• Submit updated documentation as necessary.

CONSTRUCTION

No credit submittal.

REFERENCES

NY CHPS Version 1.0 3.3.5
Building Management System Controls
HVAC and Hot Water

SCA DESIGN REQUIREMENTS
6.2.20 Building Management Control System / Direct Digital Control BMS/DDC

SCA STANDARD SPECIFICATIONS
15970 Temperature Control System
(LonWorks BMS/DDC With School Operating Console)
15973 Facility Management Systems Integration
15985 Sequence of Operations

SCA STANDARD DETAILS
BMS Control Diagrams

OTHER REFERENCES
None
### E3.1R MINIMUM ENERGY PERFORMANCE

#### INTENT

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 per ASHRAE/IESNA 90.1-1999 per LL86/05.

This credit is required for all projects.

#### REQUIREMENTS

1. Design the building projects to comply with both:
   - The mandatory provisions (Sections 5.4, 6.4, 7.4, 8.4, 9.4 and 10.4) of ASHRAE/IESNA Standard 90.1-2004 (without amendments);
   - The prescriptive requirements (Sections 5.5, 6.5, 7.5 and 9.6) or performance requirements (Section 11) of ASHRAE/IESNA Standard 90.1-2004 (without amendments).

2. Incorporate these provisions and requirements throughout the development of the design and construction documents from inclusion in the proposed specification table of contents through assistance with commissioning of the systems.

Note that projects required to comply with Local Law 86/05 must achieve a minimum of 20% energy use reduction per LEED-NC version 2.1 Credit EA1.1 using ASHRAE 90.1-1999.

#### BEST PRACTICES AND IMPLEMENTATION

In 2006, the SCA carried out extensive energy modeling studies of a wide range of HVAC systems, controls and building envelope improvements applied to different size schools using both LEED 2.1 and LEED 2.2 energy modeling criteria. A prototypical set of energy conservation measures was developed by the SCA to meet the requirements of the LEED-NC 2.2 Minimum Energy Performance Prerequisite, on which this credit is based, and to achieve the energy cost reductions mandated by Local Law 86/05 that are required to be calculated using method referenced in LEED 2.1.

The double-page diagram, which follows this credit, schematically depicts the components of the prototypical HVAC system and other energy conservation measures that are incorporated in the SCA Design Requirements, Standard Specifications and Standard Details.

---

**Project with Prototypical SCA energy conservation measures**

- LL86/05: Achieve minimum of 20% energy cost reduction per prototypical modeling using ASHRAE 90.1-1999
- Payback analysis has been completed for prototypical systems achieving 20-30% savings

**NYC Green Schools Rating System E3.1 Minimum Energy Compliance**

- Compliance is achieved per prototypical energy conservation measures. Prototypical modeling has been conducted to demonstrate compliance
- Payback analysis has been completed for prototypical systems achieving 20-30% savings

**NYC Green Schools Rating System A3.1 Optimize Energy Performance**

- Credit points cannot be achieved for this credit using prototypical modeling

---

**Atypical project requiring project specific modeling - as directed by SCA**

- LL86/05: Model alternate energy conservation measures selected with SCA to achieve 20-30% energy cost reduction for regulated loads, using ASHRAE 90.1-1999
- Conduct payback analysis for systems achieving 25-30% savings

**NYC Green Schools Rating System E3.1 Minimum Energy Compliance**

- Demonstrate compliance with project specific modeling
- No credit points

**NYC Green Schools Rating System A3.1 Optimize Energy Performance**

- Establish energy cost reduction based on project specific modeling
- Achieve credit points based on level of energy cost savings
If directed by the Authority to investigate alternative systems, perform the calculations demonstrating compliance with ASHRAE 90.1.2004 and compliance with Local Law 86/05 and Credit A3.1- A-3.4 (Optimize Energy Performance) should be pursued.

**DESIGN DEVELOPMENT**

**HVAC ENGINEER’S RESPONSIBILITY**
- Submit a narrative summarizing the design approach for credit compliance and identifying applicable SCA standards to be incorporated in the design documents. Identify any potential departures from SCA standards relating to this credit. Describe compliance with SCA standard HVAC and lighting requirements controls and energy conservation measures to achieve compliance with this credit and LL86/05 energy reduction requirements.

**60% CONSTRUCTION DOCUMENTS**

**HVAC ENGINEER’S RESPONSIBILITY**
- Submit design drawings and specifications in compliance with SCA Design Requirements.
  OR
- Submit calculations demonstrating compliance with ASHRAE 90.1-2004 and LL86/05 and submit drawings and specifications for alternative systems.

**100% CONSTRUCTION DOCUMENTS**

**HVAC ENGINEER’S RESPONSIBILITY**
- Submit Certification Form with completed information for this credit.
- Submit updated documentation as necessary.
- Submit LL86/05 Compliance Form.

**CONSTRUCTION**

**HVAC ENGINEER’S RESPONSIBILITY**
- Submit reporting forms for compliance with LL86/05.

**REFERENCES**

ASHRAE 90.1.2004
ASHRAE 90.1.1999
DOE: www.energycodes.gov

LEED-NC v 2.2  Credit EA Pr 2
Minimum Energy Performance

**SCA DESIGN REQUIREMENTS**

1.4.1 Exterior Masonry Wall
6.2.20 Building Management Control System/DOC Control BMS
6.2.0 General Overview of Heating Ventilation and Air Conditioning Systems
6.2.3 Non-Assembly Spaces
6.2.4 Public Assembly Spaces
6.2.9 Convectors and Enclosures
6.2.11 Existing School Buildings

**SCA STANDARD SPECIFICATIONS**

08521 Aluminum Windows DH
08524 Aluminum Windows Projected
08522 Aluminum Windows DH
15517 Water Treatment Hydronic Systems
15540 HVAC Pumps
15565 Condensing Boilers
15781 Packaged Htg & Cooling Units
15853 Custom Packaged Rooftop Heating and Cooling Units (VAV)
15854 Custom Packaged Rooftop Heating and Cooling Units (CV)
15855 Commercial Packaged Rooftop Heating and Cooling Units
15970 Temperature Control System
15973 FMS Integration
15930 Variable Air Terminals
15985 Sequence of Operations
16500 Interior Building Lighting

**SCA STANDARD DETAILS**

04200 Exterior Cavity Walls
15970 BMS Control Diagrams

**OTHER REFERENCES**

ASHRAE 90.1.2004
ASHRAE 90.1.1999
DOE: www.energycodes.gov
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.
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.

Transmittance Properties For Three Types of Glass

- **Clear Glass**
- **Typical Low E Glass**
- **Spectrally Sensitive Low E Glass**

**Radiation Wavelength**

Information from Lawrence Berkeley National Laboratory

<table>
<thead>
<tr>
<th>UV</th>
<th>Vis (V)</th>
<th>Infrared (IR)</th>
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<tr>
<td>UV &lt; 1%</td>
<td>V = 60%</td>
<td>IR = 40%</td>
</tr>
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</table>

**Fig. 1**

- **Boiler Room**
- **Gas Fired Condensing Boiler**
- **Hot Water Pump**
- **Conventional Single Duct Non-Fan Powered VAV Box**
- **Hot Water Baseboard Perimeter Heating (Typical)**
- **R15 Insulation in Exterior Cavity Wall**
- **Spectrally Selective Low-E Glazing (See Fig. 1)**
- **Energy Efficient Lighting with Occupancy Sensors (Typical)**
- **Space Temperature Sensor (Typical)**

**MINIMUM ENERGY PERFORMANCE DIAGRAMS: CREDIT E3.1r**
<table>
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<tbody>
<tr>
<td>Design all major HVAC components such that they are correctly matched to loads to preclude unnecessary over-sizing and to ensure energy efficient operation.</td>
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<tr>
<td>Systems shall be sized and configured to efficiently handle peak and design load conditions, but more importantly to operate in an energy-efficient manner during a wide range of partial load conditions, which are the operating ranges that HVAC systems handle most of the time.</td>
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<tr>
<td>Submit the load calculations and a written narrative rationale for selecting the specified equipment and establishing the most efficient system size and configuration.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Best practices for compliance are incorporated in the referenced Design Requirement.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Systems should not be sized so tightly that there is no allowance for degradation of equipment.</td>
<td></td>
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</tbody>
</table>
CREDIT SUBMITTALS

DESIGN DEVELOPMENT
• Submit a narrative summarizing how compliance will be achieved.

60% CONSTRUCTION DOCUMENTS
HVAC ENGINEER’S RESPONSIBILITY
• Submit the load calculations, design drawings and a written narrative rationale for selecting the specified equipment and establishing the most efficient system size and configuration.

100% CONSTRUCTION DOCUMENTS
HVAC ENGINEER’S RESPONSIBILITY
• Submit Certification Form with completed information for this credit.
• Submit updated documentation as necessary.

CONSTRUCTION
No credit submittal.

REFERENCES

NY CHPS Version 1.0 3.1.2
HVAC System Sizing

SCA DESIGN REQUIREMENTS
6.2.13 Arrangement and Sizing of Equipment
6.2.9 Heating and Cooling Design Parameters (Load Calculations)

SCA STANDARD SPECIFICATIONS
15540 HVAC Pumps
15565 Condensing Boilers
15650 Refrigeration
15781 Packaged Heating and Cooling Units
15783 Split Heat Pump System
15852 Air Handling Units
15853 Custom Packaged Rooftop Heating and Cooling Units (Variable Air Volume System)
15854 Custom Packaged Rooftop Heating and Cooling Units (Constant Volume System)
15855 Commercial Packaged Rooftop Heating and Cooling Units

SCA STANDARD DETAILS
None

OTHER REFERENCES
None
The NYC Department of Sanitation (DSNY) website reports that 12,000 tons per day of garbage are exported from New York City to outlying incinerators and landfills.

The selection of materials used in a construction project, and the manner in which materials are disposed of from construction sites and operating school facilities, have a significant impact on the natural and man-made environment. The purpose of this section is to encourage school design and construction that reduces the use of virgin natural resources and decreases the volume of waste materials disposed. This is achieved by:

- Requiring waste material recycling throughout the construction process.
- Limiting waste by encouraging re-use of existing structures and materials.
- Mandating selection of materials with high-recycled content.
- Providing for post-occupancy recycling in school buildings.

Since recycling forms the basis of students’ first experience in environmental stewardship, it is important that the materials and building components of their schools are chosen, used, and disposed of responsibly.
M1.1R STORAGE & COLLECTION OF RECYCLABLES

INTENT

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

This credit is required for all projects.

REQUIREMENTS

1. Provide an easily accessible central area dedicated to the collection and storage of non-hazardous materials for recycling, including paper, corrugated cardboard, glass, plastics and metal. Provide space in, or adjacent to, this recycling area, for the storage of utility carts used for collecting trash and recyclables. Recycling, sorting and cart storage are not required at every floor. Equipment for storing and processing recyclables is provided by the SCA/F&E Unit based on a standard list of items per project type.

2. Size central recycling collection/storage area according to guidelines in the Design Requirement DR 2.3.1 Refuse and Recycling Storage, which are consistent with LEED-NC 2.2 space guidelines. Allow space for bailers and compactor in the Trash Room.

3. At the cafeteria, provide designated area(s) for bin(s) for recycling. Since the NYC Department of Sanitation sorts glass, plastic, metal, and milk and juice boxes off-site, only one type of recycling container needs to be provided at cafeterias. The amount of space for recycling containers is established by the Design Team based on criteria in DR#1.3.1.8.

Provide wall-mounted sign holder(s) at cafeteria trash and recycling areas for the display of recycling instructional posters.

4. Within the kitchen area, provide space for two types of recycling containers to accommodate glass/plastic/metal and paper/cardboard.
SCA Standard Details, Standard Specifications and Design Requirements include recycling areas.

The SCA F&E Unit standard furniture equipment lists include: two-bin utility cart and recycling containers for classrooms, offices and cafeteria. Design Team should confirm that these items are included in appropriate quantities on the purchase list developed by the SCA/F&E Unit for the specific project.

Develop layout for central recycling area and food service area to ensure there is sufficient space for required recycling bins, and any equipment such as compactors and balers that may be required. Location of central recycling containers shall promote easy handling and removal of those materials.

A best practice guideline for the minimum size of recycling areas is as follows:

<table>
<thead>
<tr>
<th>School Area</th>
<th>Minimum Recycling Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 to 5000 sf</td>
<td>82 sf</td>
</tr>
<tr>
<td>5,001 to 15,000 sf</td>
<td>125 sf</td>
</tr>
<tr>
<td>15,001 to 50,000 sf</td>
<td>175 sf</td>
</tr>
<tr>
<td>50,001 to 100,000 sf</td>
<td>225 sf</td>
</tr>
<tr>
<td>100,001 to 200,000 sf</td>
<td>500 sf</td>
</tr>
</tbody>
</table>

**DESIGN DEVELOPMENT**
- Submit a narrative summarizing the design approach for credit compliance and identifying applicable SCA standards to be incorporated in the design documents.

**60% CONSTRUCTION DOCUMENTS**
- Architect’s Responsibility
  - Incorporate credit requirements in specifications.
  - On 60% construction document plans, indicate areas for recycling, noting recycling area square footage(s) and number of containers assumed at cafeteria and food service areas.

**100% CONSTRUCTION DOCUMENTS**
- Architect’s Responsibility
  - Incorporate requirements in construction documents.
  - Submit Certification Form with completed information for this credit.
  - Submit updated documentation as necessary.

**CONSTRUCTION**
No credit submittal.

**REFERENCES**

LEED-NC 2.2 Prerequisite MR
Prerequisite 1 - Storage and Collection of Recyclables

SCA DESIGN REQUIREMENTS
DR 1.3.1.2 Building Organization - Space Relationships
DR 1.3.1.8 Refuse and Recycling Storage
DR 1.3.5.01 Cafeterias PK-8 and HS

SCA STANDARD SPECIFICATIONS
S11172 Waste Handling Equipment

SCA STANDARD DETAILS
None

OTHER REFERENCES
NYC Department of Sanitation general web sites on recycling in schools:

NYC Department of Sanitation web site lists what to recycle in different areas of the school:
Extend the useful life of existing building structures, conserve material resources, retain cultural resources, reduce waste and the environmental impacts of school projects as they relate to materials manufacturing and transport.

This credit is required, if feasible, for all applicable projects.

Credit | Existing Structure | Points | Requirements
---|---|---|---
M1.2 | Re-used (Const. Waste Diverted) | 75% | 1
M1.3 | 95% | 1

Maintain the targeted percentage (based on surface area) of existing building structure (including structural floor and roof deck) and envelope (exterior skin and framing, excluding window assemblies and non-structural roofing material). If the project includes an addition to an existing building, this credit is not applicable when the square footage of the addition is more than two times the square footage of the existing building.

Hazardous materials that are remediated as part of the project scope, and elements requiring replacement due to unsound material condition, shall be excluded from the total for the purpose of calculating the percentage of building materials re-used.

Projects involving modernizations or renovations that do not comply with this credit may use the weight of re-used building materials in their calculations for Construction Waste Management credits M1.5 and M1.6.

See the LEED-NC 2.2 Reference Guide for detail including approach and implementation, calculations, considerations and resources.

Interior Structural Wall:
Calculate area of both sides of wall

Structural Deck:
Calculate one surface only

Exterior Wall (including party wall):
Calculate exterior wall surface only. Do not include window area

Columns:
Calculate surface area where free-standing

Structure and Envelope To Be Re-used
This credit is only feasible for modernizations, renovations of leased spaces, and for additions fitting the size criteria outlined in the credit requirements.

The design should not be compromised to achieve this credit. This credit should only be pursued when there is no negative impact on design, including cost and program function.

**DEVELOPMENT DESIGN**

**ARCHITECT’S RESPONSIBILITY**
- Submit a narrative statement indicating if these credits are feasible or whether the portion of building elements to be reused is so low that their reuse should be used to contribute to credits M1.5 and M1.6 instead.
- For projects that combine a renovation and an addition, submit calculations showing that the addition is less than two times the square footage of the existing building.

**60% CONSTRUCTION DOCUMENTS**
- Submit draft Building Reuse Calculation Form.

**100% CONSTRUCTION DOCUMENTS**

**ARCHITECT’S RESPONSIBILITY**
- No credit submitted.

**CONSTRUCTION**

**ARCHITECT’S RESPONSIBILITY**
- Submit Certification Form with completed information for this credit.
- Submit final Building Reuse Calculation Form (all modernization and renovation projects).

**REFERENCES**

LEED-NC 2.2 Credit MR 1.1
Building Reuse – Maintain 75% of Existing Walls, Floors and Roof

LEED-NC 2.2 Credit MR 1.2 – Building Reuse – Maintain 95% of Existing Walls, Floors and Roof

**SCA DESIGN REQUIREMENTS**
None

**SCA STANDARD SPECIFICATIONS**
None

**SCA STANDARD DETAILS**
None

**OTHER REFERENCES**
None
M1.4 BUILDING REUSE: MAINTAIN 50% OF INTERIOR NON-STRUCTURAL ELEMENTS

INTENT

Extend the useful life of existing building materials, conserve material resources, retain cultural resources, reduce waste and the environmental impacts of school projects as they relate to materials manufacturing and transport.

This credit is required, if feasible, for all applicable projects.

REQUIREMENTS

Reuse a minimum of 50% of pre-existing interior non-structural elements (interior walls, doors, floor coverings and ceiling systems).

This credit may be pursued independently of credits M1.2 and M1.3.

If the project includes an addition to an existing building, this credit is not applicable when the square footage of the addition is more than two times the square footage of the existing building.

When calculating surface areas of materials, count both sides of walls, but only one side of doors.

Hazardous materials that are remediated as part of the project scope, and elements requiring replacement due to unsound material condition, shall be excluded from the total for the purpose of calculating the percentage of building materials re-used.

Projects involving modernizations or renovations that do not comply with this credit may use the weight of re-used building materials in their calculations for Construction Waste Management credits M1.5 and M1.6.

See the LEED-NC 2.2 Reference Guide for details including approach and implementation, calculations, considerations and resources.

Interior Non-Structural Elements Surface Area Calculation Method
This credit is only feasible for modernizations, renovations of leased spaces, and for additions fitting the size criteria outlined in the credit requirements.

The design should not be compromised to achieve this credit. This credit should only be pursued when there is no negative impact on design, including cost and program function.

DESIGN DEVELOPMENT
ARCHITECT’S RESPONSIBILITY
- Submit a narrative statement indicating if this credit is feasible, or whether the portion of building elements to be reused is so low that their reuse should be used to contribute to credits M1.5 and M1.6 instead.
- For projects that combine a renovation and an addition, submit calculations showing that the addition is less than two times the square footage of the existing building.

60% CONSTRUCTION DOCUMENTS
- Submit draft Building Reuse Calculation Form.

100% CONSTRUCTION DOCUMENTS
ARCHITECT’S RESPONSIBILITY
- No credit submitted.

CONSTRUCTION
ARCHITECT’S RESPONSIBILITY
- Submit Certification Form with completed information for this credit.
- Submit final Building Reuse Calculation Form (all modernization and renovation projects).

LEED-NC 2.2 Credit MR 1.3
Building Reuse – Maintain 50% of Interior Non-Structural Elements

SCA DESIGN REQUIREMENTS
None

SCA STANDARD SPECIFICATIONS
None

SCA STANDARD DETAILS
None

OTHER REFERENCES
None

BUILDING REUSE: MAINTAIN 50% OF INTERIOR NON-STRUCTURAL ELEMENTS: CREDIT M1.4
### M1.5R & M1.6 CONSTRUCTION WASTE MANAGEMENT

<table>
<thead>
<tr>
<th>INTENT</th>
<th>REQUIREMENTS</th>
<th>BEST PRACTICES AND IMPLEMENTATION</th>
</tr>
</thead>
</table>
| 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. Credit M1.5R is required for all projects. Credit M1.6 is required, if feasible, for all projects. | 1. Recycle and/or salvage non-hazardous construction and demolition waste.  
Credit Const. Waste Diverted Points  
M1.5R 50% 1  
M1.6 75% 1 | The SCA Standard Specifications include requirements for the Contractor to develop a construction waste management plan and to record the amount and type of construction waste diverted/recycled.  
In NYC, construction waste for recycling is typically sorted off-site. Typical construction waste materials for recycling are wood, cardboard/paper packaging, masonry and steel.  
Projects involving renovations that do not comply with building re-use credits M1.2 to M1.4 may use the weight of re-used building materials calculated on the Building Reuse Form toward credits M1.5R and M1.6.  
See LEED-NC 2.2 Reference Guide for detail including approach and implementation, calculations, considerations and resources.  
The feasibility of credit M1.6 will be determined during construction based on construction waste documentation submitted by the Contractor. |

The SCA Standard Specifications include requirements for the Contractor to develop a construction waste management plan and to record the amount and type of construction waste diverted/recycled.  
In NYC, construction waste for recycling is typically sorted off-site. Typical construction waste materials for recycling are wood, cardboard/paper packaging, masonry and steel.  
Projects involving renovations that do not comply with building re-use credits M1.2 to M1.4 may use the weight of re-used building materials calculated on the Building Reuse Form toward credits M1.5R and M1.6.  
See LEED-NC 2.2 Reference Guide for detail including approach and implementation, calculations, considerations and resources.  
The feasibility of credit M1.6 will be determined during construction based on construction waste documentation submitted by the Contractor.
DESIGN DEVELOPMENT
ARCHITECT’S RESPONSIBILITY
• Submit a narrative identifying applicable SCA standards to be incorporated. Indicate if building structure or non-structural items are anticipated to be re-used in quantities that would contribute to this credit as opposed to credits M1.2-M1.3 or M1.4.

60% CONSTRUCTION DOCUMENTS
ARCHITECT’S RESPONSIBILITY
• Incorporate credit requirements in specifications.

100% CONSTRUCTION DOCUMENTS
No credit submittal.

CONSTRUCTION
CONTRACTOR’S RESPONSIBILITY
Per the Project Specifications:
• Submit construction waste management plan.
• Submit waste reduction progress reports with each application for payment.
• Submit construction waste calculations and letter stating total waste material diverted and method of diversion.
• Complete construction waste matrix included in the specifications.

ARCHITECT’S RESPONSIBILITY
• For projects where portions of existing building elements will be revised in quantities that will comply with this credit, submit Building Reuse Calculation Form.

REFERENCES
LEED-NC 2.2 Credit MR 2.1
Construction Waste Management
– Divert 50% from Disposal

LEED-NC 2.2 Credit MR 2.2
– Construction Waste Management
– Divert 75% from Disposal

SCA DESIGN REQUIREMENTS
None

SCA STANDARD SPECIFICATIONS
G01015 Miscellaneous Provisions
G01524 Construction Waste Management
S02060 Building Demolition
S02070 Selective Removals & Demolition

SCA STANDARD DETAILS
None

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

This credit is required for all projects.

Use materials with recycled content such that the sum of post-consumer recycled content plus one-half of the pre-consumer recycled content constitutes at least 10% (based on cost) of the total value of the materials in the project.

The recycled content value of a material assembly shall be determined by weight. The recycled fraction of the assembly is then multiplied by the cost of assembly to determine the recycled content value. Recycled contents shall be defined in accordance with the International Organization for Standardization document, ISO 14021 – Environmental labels and declaration – Self-declared environmental claims (Type II environmental labeling).

The following materials are not required to be included in calculations for this credit: mechanical, electrical and plumbing components, elevators and fixtures and equipment.

Pre-consumer material is defined as material diverted from the waste stream during the manufacturing process. Excluded is reutilization of materials such as rework, regrind or scrap generated in a process and capable of being reclaimed within the same process that generated it.

Per the methodology for this credit in the current version of LEED, the typical value of materials on the project can be assumed to be 45% of the cost of Divisions 2-10. SCA projects should use this assumption as opposed to totaling materials use for each item. In New York City, where labor rates are high, this is a conservative assumption.

Items recycled on-site (e.g., pavement ground on-site and reused as fill) count toward M1.5R and M1.6 Construction Waste Management Credits – not toward this credit.

Breakdown of Approximate Percentage of Recycled Material for Typical School to Achieve 10% Recycled Content

- Structural Steel (45%)
- Other Metals (22%)
- Concrete (11%)
- Gypsum Board (7%)
- Ceiling Tile (5%)
- Unit Masonry (6%)
- Tile (3%)
SCA specification sections include minimum recycled content limits for major project components. The recycled content percentages have been selected to achieve this credit’s requirement in the full range of school projects and are typical of those products.

Review of final calculation results from completed school projects will allow for future refinement of products and percentages.

<table>
<thead>
<tr>
<th>Material</th>
<th>Min. % Post-Cons. Content</th>
<th>Min. % Pre-Cons. Content</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asphalt Pavement</td>
<td>Ask to report</td>
<td></td>
</tr>
<tr>
<td>Concrete</td>
<td>6% Combined</td>
<td></td>
</tr>
<tr>
<td>Unit Masonry CMU</td>
<td>10% Combined</td>
<td></td>
</tr>
<tr>
<td>Brick</td>
<td>Ask to report</td>
<td></td>
</tr>
<tr>
<td>Structural Steel</td>
<td>30% 15%</td>
<td></td>
</tr>
<tr>
<td>Non-Structural Steel</td>
<td>25% 0%</td>
<td></td>
</tr>
<tr>
<td>Batt Insulation</td>
<td>0% 20%</td>
<td></td>
</tr>
<tr>
<td>Rigid Insulation</td>
<td>7% Combined</td>
<td></td>
</tr>
<tr>
<td>Sprayed Fire Resistive Materials</td>
<td>5% Combined</td>
<td></td>
</tr>
<tr>
<td>Roofing Membrane</td>
<td>7% 0%</td>
<td></td>
</tr>
<tr>
<td>Aluminum Projected Windows</td>
<td>Ask to report</td>
<td></td>
</tr>
<tr>
<td>GWB</td>
<td>5% 90%</td>
<td></td>
</tr>
<tr>
<td>Abuse Resistant GWB</td>
<td>0% 0%</td>
<td></td>
</tr>
<tr>
<td>Fire Rated GWB</td>
<td>0% 0%</td>
<td></td>
</tr>
<tr>
<td>GB/Tile Backer Board</td>
<td>5% 0%</td>
<td></td>
</tr>
<tr>
<td>Ceramic Wall Tile</td>
<td>0% 4%</td>
<td></td>
</tr>
<tr>
<td>Ceramic Floor Tile</td>
<td>0% 40%</td>
<td></td>
</tr>
<tr>
<td>Ceramic Quarry Tile</td>
<td>0% 8%</td>
<td></td>
</tr>
<tr>
<td>Acoustic Ceiling Tile</td>
<td>0% 60%</td>
<td></td>
</tr>
<tr>
<td>VCT</td>
<td>0% 1%</td>
<td></td>
</tr>
<tr>
<td>Vinyl Sheet Flooring</td>
<td>0% 1%</td>
<td></td>
</tr>
<tr>
<td>Carpet</td>
<td>0% 10%</td>
<td></td>
</tr>
<tr>
<td>Toilet Partitions</td>
<td>Ask to report</td>
<td></td>
</tr>
</tbody>
</table>

**Design Development**

**Architect’s Responsibility**
- Submit a narrative summarizing the design approach for credit compliance and identifying applicable SCA standards to be incorporated into the design documents.

**60% Construction Documents**

**Architect’s Responsibility**
- Incorporate credit requirements in construction documents. Indicate any products beyond those in the Standard Specifications where recycled content is to be reported.

**100% Construction Documents**

No credit submittal.

**Construction**

**Contractor’s Responsibility**
Per the Project Specifications:
- Submit Contractor’s Sustainable Materials Forms with information on recycled content.
- Submit construction cost figure for CSI divisions 2-10.

**Architect’s Responsibility**
- Review Contractor’s submittals for verification of regional content levels.
- Submit Recycled Content Summary Form based on Contractor’s Sustainable Materials Forms and construction cost figure.
- Submit Certification Form with completed information for this credit.
REGIONAL MATERIALS, 10% EXTRACTED, PROCESSED & MANUFACTURED REGIONALLY

**INTENT**

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.

This credit is required for all projects.

**REQUIREMENTS**

Use building materials or products that have been extracted, harvested or recovered, as well as manufactured, within 500 miles of the project site for a minimum of 10% (based on cost) of the total material value. If only a fraction of a product or material is extracted/harvested/recovered and manufactured locally, then only that percentage (calculate cost contribution by percentage of weight) shall contribute to the regional value.

The following materials are not required to have regional content for compliance with this credit: mechanical, electrical and plumbing components and specialty items such as elevators and furniture fixtures and equipment.

Per the methodology of this credit in the current version of LEED, the typical value of materials on the project can be assumed to be 45% of the cost of Divisions 2-10. SCA projects should use this assumption as opposed to totaling materials use for each item. In New York City, where labor rates are high, this is a conservative assumption.
To be consistent with city and state requirements the SCA specifications do not mandate regional content for materials. Design teams may not add requirements to the specifications that materials be extracted, processed and manufactured regionally.

The SCA specifications, without mandating regional content, require documentation of any regional content for a select group of materials which are available regionally. It is anticipated that typical projects will meet this credit’s requirements by obtaining the specified information on these materials.

Review of final calculation results from completed school projects will allow for future refinement of products.

**Materials for Which Regional Content Documentation Requested**

<table>
<thead>
<tr>
<th>Section Number</th>
<th>Section Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>02200</td>
<td>Earthwork</td>
</tr>
<tr>
<td>02511</td>
<td>Asphalt Pavement</td>
</tr>
<tr>
<td>02900</td>
<td>Landscaping Materials</td>
</tr>
<tr>
<td>03300</td>
<td>Concrete</td>
</tr>
<tr>
<td>04200</td>
<td>Concrete Masonry Units</td>
</tr>
<tr>
<td>04200</td>
<td>Brick</td>
</tr>
<tr>
<td>04200 Division 5</td>
<td>Structural Steel</td>
</tr>
<tr>
<td>05300</td>
<td>Metal Deck</td>
</tr>
<tr>
<td>09260</td>
<td>Gypsum Wallboard</td>
</tr>
<tr>
<td>09260</td>
<td>Tile Backer Board</td>
</tr>
</tbody>
</table>

**Design Development**

**Architect’s Responsibility**

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

**60% Construction Documents**

**Architect’s Responsibility**

- Incorporate requirements in specifications.

**100% Construction Documents**

No credit submittal.

**Construction**

**Contractor’s Responsibility**

Per the Project Specifications:

- Submit Contractor’s Sustainable Materials Forms with information on regional content.
- Submit construction cost figure for CSI divisions 2-10.

**Architect’s Responsibility**

- Review Contractor’s submittals for verification of regional content levels.
- Submit Regional Content Summary Form based on Contractor’s Sustainable Materials Forms and construction cost figure.
- Submit Certification Form with completed information for this credit.

**References**

LEED-NC 2.2 Credit MR 5.1
Regional Materials 10% Extracted, Processed & Manufactured Regionally

**SCA Design Requirements**

None

**SCA Standard Specifications**

- 02200 Earthwork
- 02521 Concrete Curbs and Pavements
- 02900 Landscaping
- 03300 Cast-in-Place Concrete
- 04200 Unit Masonry
- 09260 Gypsum Board Assemblies

**SCA Standard Details**

None

**Other References**

None
To incorporate mold resistant materials at the building envelope, including wallboard and roof deck products. This credit is required for all projects.

Select materials for exterior envelope construction that are resistant to mold. Incorporate mold resistance standards in specifications for applicable materials at the building envelope.

The SCA standards and specifications call for materials at the building envelope that contain little or no organic material. The standard for exterior wall construction is brick and block cavity wall. The standard for roof deck is concrete on metal deck.

The Standard Specifications include requirements for compliance with mold resistant standards for wallboard, spray fireproofing, building insulation, exterior and interior paint. The standards referenced in the specification are included for reference in the "Other References" section on the facing page.

SCA standard details have been developed to address the critical element in mold resistance: water penetration.
DESIGN DEVELOPMENT

ARCHITECT’S RESPONSIBILITY

• Submit a narrative summarizing the design approach for credit compliance and identifying applicable SCA standards to be incorporated into the design documents.

60% CONSTRUCTION DOCUMENTS

ARCHITECT’S RESPONSIBILITY

• Incorporate credit requirements in specifications.

100% CONSTRUCTION DOCUMENTS

ARCHITECT’S RESPONSIBILITY

• Submit Certification Form with completed information for this credit.

CONSTRUCTION

No credit submittal.

NY-CHPS Version 1.0 Credit 4.1.1
Wallboard & Roof Deck Products

SCA DESIGN REQUIREMENTS

None

SCA STANDARD SPECIFICATIONS

06100 Rough Carpentry
09260 Gypsum Board Assemblies

SCA STANDARD DETAILS

None

OTHER REFERENCES

ASTM G21-02 Standard Practice for Determining Resistance of Synthetic Polymeric Materials to Fungi

ASTM D4300-01 Standard Test Methods for Ability of Adhesive Films to Support or Resist the Growth of Fungi


ASTM C1338-00 Standard Test Method for Determining Fungi Resistance of Insulation Materials and Facings
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.

This credit is required for all projects.

<table>
<thead>
<tr>
<th>INTENT</th>
<th>REQUIREMENTS</th>
<th>BEST PRACTICES AND IMPLEMENTATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Specify low-mercury fluorescent lamps for all new fluorescent light fixtures.</td>
<td>The SCA Standard Specifications include this requirement for light fixtures. Any additional non-standard fluorescent fixtures approved for incorporation in the project by the SCA must also comply.</td>
<td></td>
</tr>
<tr>
<td>CREDIT SUBMITTALS</td>
<td>REFERENCES</td>
<td></td>
</tr>
<tr>
<td>------------------</td>
<td>------------</td>
<td></td>
</tr>
<tr>
<td><strong>DESIGN DEVELOPMENT</strong></td>
<td><strong>REFERENCES</strong></td>
<td></td>
</tr>
<tr>
<td><strong>ELECTRICAL ENGINEER'S RESPONSIBILITY</strong></td>
<td>NY-CHPS Credit 7.2.3</td>
<td></td>
</tr>
<tr>
<td>• Submit a narrative summarizing the design approach for credit compliance and identifying applicable SCA standards to be incorporated into the design documents.</td>
<td>Purchase Low-Mercury Lighting Reduce Mercury Waste</td>
<td></td>
</tr>
<tr>
<td><strong>60% CONSTRUCTION DOCUMENTS</strong></td>
<td><strong>SCA DESIGN REQUIREMENTS</strong></td>
<td></td>
</tr>
<tr>
<td><strong>ELECTRICAL ENGINEER'S RESPONSIBILITY</strong></td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>• Incorporate credit requirements in specifications.</td>
<td><strong>SCA STANDARD SPECIFICATIONS</strong></td>
<td></td>
</tr>
<tr>
<td><strong>100% CONSTRUCTION DOCUMENTS</strong></td>
<td>16500 Interior Building Lighting</td>
<td></td>
</tr>
<tr>
<td><strong>ELECTRICAL ENGINEER'S RESPONSIBILITY</strong></td>
<td>16501 Lamps, Ballasts and Accessories</td>
<td></td>
</tr>
<tr>
<td>• Update specifications as required for low-mercury fluorescent fixtures of non-standard SCA fixtures.</td>
<td>16530 Site/Security/ Lighting</td>
<td></td>
</tr>
<tr>
<td>• Submit Certification Form with completed information for this credit.</td>
<td><strong>SCA STANDARD DETAILS</strong></td>
<td></td>
</tr>
<tr>
<td>• Submit updated documentation as necessary.</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td><strong>CONSTRUCTION</strong></td>
<td><strong>OTHER REFERENCES</strong></td>
<td></td>
</tr>
<tr>
<td><strong>ELECTRICAL ENGINEER'S RESPONSIBILITY</strong></td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>• Review Contractor’s submittals for compliance with low-mercury fluorescent lamps for light fixtures.</td>
<td><strong>M</strong></td>
<td></td>
</tr>
</tbody>
</table>
Because of the high rates of asthma among NYC school children and current concerns about the health of students and staff, the SCA has expanded and placed great emphasis on this section of the NYC Green Schools Guide. Over one third of the credits in the guide are devoted to indoor environmental quality.

The credits in this section improve indoor environmental quality during construction and after occupancy by requiring a higher standard of performance relating to:

- Construction practices
- Operational and maintenance practices
- Selection of low-emitting materials
- Improved ventilation
- Air-flow monitoring and verification

IEQ improvements are provided throughout the school and include:

- Natural day lighting, views, and glare control measures
- Indirect artificial lighting and controls
- Improved acoustic performance
- Thermal comfort control
- Improved air filtration
- Reduced levels of indoor air contaminants

Together, these measures will provide a healthy, comfortable indoor environmental for NYC public schools.
**Q1.1R MINIMUM IAQ PERFORMANCE / INCREASED VENTILATION**

<table>
<thead>
<tr>
<th>INTENT</th>
<th>REQUIREMENTS</th>
<th>BEST PRACTICES AND IMPLEMENTATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Establish minimum indoor air quality (IAQ) performance to enhance indoor environment in buildings, thus contributing to the comfort and well-being of the occupants.</td>
<td>1. Meet the minimum requirements of Sections 4 through 7 of ASHRAE 62.1-2004 Ventilation for Acceptable Indoor Air Quality.</td>
<td>The SCA Design Requirements, specifications, and details are consistent with compliance with this credit.</td>
</tr>
<tr>
<td></td>
<td>2. The mechanical system shall be designed using whichever ventilation rates are larger: the NYC DOB Code ventilation rates or 30% above the ASHRAE Standard 62.1-2004 breathing zone outdoor ventilation rates. The exceptions are cafeterias and multipurpose rooms served by rooftop units that also serve an associated kitchen. The mechanical systems for these cafeterias and multi-purpose rooms shall be designed using whichever ventilation rate is larger: NYC DOB Code ventilation rates or ASHRAE Standard 62.1-2004 breathing zone outdoor ventilation rates, without the 30% increase.</td>
<td>Section 4 of ASHRAE 62.1-2004 addresses analysis of outdoor air quality. The SCA/IEH Unit conducts site investigation and research consistent with this section. This information is provided to the Design Team.</td>
</tr>
<tr>
<td></td>
<td>The auditorium and gymnasium spaces shall achieve the 30% increase as stipulated above and shall use CO2 controls to modulate breathing zone rates.</td>
<td>The MERV 13 filters specified for fresh air intake are sufficient to accommodate any instances where New York City counties are non-attainment area for particulate matter (PM10).</td>
</tr>
<tr>
<td></td>
<td>Mechanical ventilation, as opposed to natural ventilation, is the SCA standard because it facilitates control of indoor thermal conditions.</td>
<td>When the IEH Unit investigation indicates the county that the project is located in is a non-attainment area for ozone, special filters will be required.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Compliance with the other three referenced sections of ASHRAE 62.1-2004 do not involve input from SCA/IEH. The content of those sections is summarized below.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Section 5. Systems and Equipment — requirements for: outdoor air intake and exhaust, filtration, dehumidification, and recirculation of air and relative humidity.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Section 6 Procedures – ventilation rate procedures.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Section 7 Construction and Systems Start-up – protection, construction, start-up, field testing and balancing.</td>
</tr>
</tbody>
</table>
**DESIGN DEVELOPMENT**

**HVAC ENGINEER’S RESPONSIBILITY**
- Submit a narrative summarizing the design approach for credit compliance and identifying applicable SCA standards to be incorporated into the design documents. Describe the proposed ventilation system design and note any special considerations relating to compliance.

**60% CONSTRUCTION DOCUMENTS**
**HVAC ENGINEER’S RESPONSIBILITY**
- Comply with SCA Design Requirements.
- Edit SCA Standard Specifications.
- Incorporate credit requirements in construction documents. Submit ventilation calculations verifying compliance with Table 6-1 of ASHRAE 62.1-2004 entitled, “Minimum Ventilation Rates in Breathing Zone”, increased by 30% (with the exception of the cafeterias and multi-purpose rooms).

**100% CONSTRUCTION DOCUMENTS**
**HVAC ENGINEER’S RESPONSIBILITY**
- Submit Certification Form with completed information for this credit.
- Submit updated documentation as necessary.

**CONSTRUCTION**

**CONTRACTOR’S RESPONSIBILITY**
Per the Project Specifications:
- Provide air balancing reports.

**COMMISSIONING AGENT’S RESPONSIBILITY**
- Verify outside air quantities.

**REFERENCES**

**LEED 2.2 Credit EQ Prerequisite 1**
- Minimum IAQ Performance

**LEED 2.2 Credit EQ 2**
- Increased Ventilation

**ASHRAE 62.1-2004**

**SCA DESIGN REQUIREMENTS**
- 6.2.0 General Overview of Heating Ventilation and Air Conditioning Systems
- 6.2.9 Heating and Cooling Design Parameters (Load Calculations)
- 6.2.1 HVAC Unit Centralization and Coordination
- 6.2.3 Non-Assembly Spaces (Classrooms, Offices, etc.)
- 6.2.4 Public Assembly Spaces

**SCA STANDARD SPECIFICATIONS**
- S01550 Indoor Air Quality Requirements
- 15781 Packaged Heating and Cooling Units
- 15852 Air Handling Units
- 15853 Custom Packaged Rooftop Heating and Cooling Units (Variable Air Volume System)
- 15854 Custom Packaged Rooftop Heating and Cooling Units (Constant Volume System)
- 15855 Commercial Packaged Rooftop Heating and Cooling Units
- 15985 Sequence of Operations
- 15992 Cleaning and Testing
- 15993 Balancing of Systems

**LEED NC 2.2 Credit EQ Pr 1**
- Minimum IAQ Performance

**LEED NC 2.2 Credit EQ 2**
- Increased Ventilation

**SCA STANDARD DETAILS**
None

**OTHER REFERENCES**
- The US Environmental Protection Agency:
  www.epa.gov/iaq

- Information on New York City Region outdoor air quality:

- Indoor air quality in large buildings:
  www.epa.gov/iaq/largeblgs/actionpl.html

- Building Assessment Survey and Evaluation (BASE) Study:
  www.epa.gov/iaq/largeblgs/base_page.htm
### Q1.2R AIR FLOW STATIONS, OUTSIDE AIR INTAKES

<table>
<thead>
<tr>
<th>INTENT</th>
<th>REQUIREMENTS</th>
<th>BEST PRACTICES AND IMPLEMENTATION</th>
</tr>
</thead>
</table>
| Monitor and collect data at all outdoor air intakes to ensure that indoor air quality meets established standards. This credit is required for all projects. Provide air flow stations on all outdoor air intakes of central ventilating and air-conditioning equipment. These systems must include data accumulation and be downloadable for printout. Data to be accumulated on cubic feet per minute basis once a day during school operation. | DESIGN  
SCA Design Requirements and Standard Specifications include air flow stations and monitoring requirements.  
Air flow stations shall be provided at all outside air intake air systems of central air distribution systems.  
**POST-OCCUPANCY**  
Per the NY-CHPS basis for this credit, there are specific post-occupancy operating and reporting requirements that DOE/DSF shall comply with:  
- Air flow stations shall be calibrated on a yearly basis by DOE/DSF staff or as indicated by manufacturer recommendations.  
- Outside air quantities for each air distribution system shall be provided to the NYC DOE Health and Safety Committee on a quarterly basis.  
- Information shall be kept three years from the date of collection and shall be made available to the public upon request. |
DESIGN DEVELOPMENT

HVAC ENGINEER’S RESPONSIBILITY

• Submit a narrative summarizing the design approach for credit compliance and identifying applicable SCA standards to be incorporated into the design documents. Describe air flow stations and monitoring system and note any special considerations relating to compliance.

60% CONSTRUCTION DOCUMENTS

HVAC ENGINEER’S RESPONSIBILITY

• Incorporate credit requirements in construction documents.

100% CONSTRUCTION DOCUMENTS

HVAC ENGINEER’S RESPONSIBILITY

• Submit Certification Form with completed information for this credit.
• Submit updated documentation as necessary.

CONSTRUCTION

COMMISSIONING AGENT’S RESPONSIBILITY

• Verify operation of flow measuring stations.

REFERENCES

NY-CHPS Version 1.0
Credit 5.4.8
Air Flow Stations on Outside Air Intakes

SCA DESIGN REQUIREMENTS

6.2.0 General Overview of Heating Ventilation and Air Conditioning Systems
6.2.1 HVAC Unit Centralization and Coordination
6.2.3 Non-Assembly Spaces (Classrooms, Offices, etc.)
6.2.4 Public Assembly Spaces
6.2.9 Heating and Cooling Design Parameters (Load Calculations)

SCA STANDARD SPECIFICATIONS

15970 Temperature Control System (LonWorks BMS/DDC With School Operating Console)
15971 Temperature Control System (LonWorks DDC Only)
15985 Sequence of Operations

SCA STANDARD DETAILS

None

OTHER REFERENCES

None
<table>
<thead>
<tr>
<th>INTENT</th>
<th>REQUIREMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>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.</td>
<td>Per the Project Specifications the Contractor is to:</td>
</tr>
<tr>
<td>This credit is required for all projects.</td>
<td>1. Develop and implement an Indoor Air Quality (IAQ) Management Plan for the construction and pre-occupancy phases of the building as follows:</td>
</tr>
<tr>
<td></td>
<td>• During construction, meet or exceed the recommended Control Measures of the Sheet Metal and Air Conditioning Contractors National Association (SMACNA) IAQ Guidelines for Occupied Buildings under Construction, 1995, Chapter 3.</td>
</tr>
<tr>
<td></td>
<td>• Protect absorptive materials that are either stored on-site or installed from moisture damage.</td>
</tr>
<tr>
<td></td>
<td>• If permanently installed air handlers are used during construction, filtration media with a Minimum Efficiency Reporting Value (MERV) 8 shall be used at each return air inlet (i.e., grilles, registers, openings in ductwork where ceilings are used as return air plenums) as determined by ASHRAE 52.2-1999. Per LEED-NC 2.2, running mechanical equipment for balancing or commissioning is exempt.</td>
</tr>
<tr>
<td></td>
<td>• Replace all permanently required filtration media immediately prior to occupancy.</td>
</tr>
<tr>
<td></td>
<td>2. Mechanically exhaust materials that emit Volatile Organic Compounds (VOCs) or urea formaldehyde during installation. Continue ventilation of those materials after installation for at least 72 hours or until emissions dissipate. It is reasonable to exempt from these requirements, materials that comply with low emissions criteria in credits Q3.1-Q3.5.</td>
</tr>
<tr>
<td></td>
<td>3. Use high-efficiency particulate arrestor (HEPA) vacuum on carpeted and soft surfaces prior to substantial completion. For phased, occupied renovations, HEPA vacuum any carpet daily in occupied areas.</td>
</tr>
<tr>
<td></td>
<td>4. During construction or renovation, meet or exceed the following minimum requirements:</td>
</tr>
<tr>
<td></td>
<td>• Building materials, such as wood, porous insulation, paper and fabric, shall be kept dry to prevent the growth of mold and bacteria.</td>
</tr>
<tr>
<td></td>
<td>• Schedule deliveries so that materials that are susceptible to mold growth are installed after the construction area is watertight.</td>
</tr>
<tr>
<td></td>
<td>• During construction, cover these materials to prevent rain damage, and if resting on the ground, use spacers to allow air to circulate between the ground and the materials. Provide site drainage as needed.</td>
</tr>
<tr>
<td></td>
<td>• Water-damaged materials shall begin to be dried within 24 hours. Due to the possibility of mold and bacterial growth, materials that are damp or wet for more than 48 hours may need to be discarded as determined by the SCA.</td>
</tr>
<tr>
<td></td>
<td>• Immediately remove materials showing signs of mold and mildew, including any with moisture stains, from the site and properly dispose of them. Replace moldy materials with new, undamaged materials.</td>
</tr>
<tr>
<td></td>
<td>5. If it is not possible to install high VOC-emitting products before porous and fibrous materials (such as carpet) are installed, protect porous materials with polyethylene vapor retarders. Install carpet after spaces have been painted.</td>
</tr>
</tbody>
</table>
The SCA specification Section S01550, Indoor Air Quality Requirements, requires development and implementation of an IAQ plan consistent with this credit’s requirements.

Section S01560 Installation Sequence of Finish Materials, requires the Contractor to sequence the installation of materials to avoid contamination of absorptive materials, such as insulation, carpeting, ceiling tile and gypsum wallboard.

**DESIGN DEVELOPMENT**

**ENGINEER’S RESPONSIBILITY**
- Submit a narrative summarizing the design approach for credit compliance and identifying applicable SCA standards to be incorporated into the design documents.

**60% CONSTRUCTION DOCUMENTS**

**ENGINEER’S RESPONSIBILITY**
- Include appropriate specification sections with submittal. Review any project specific modifications with SCA Design Manager.

**100% CONSTRUCTION DOCUMENTS**

**ENGINEER’S RESPONSIBILITY**
No credit submittal.

**CONSTRUCTION**

**CONTRACTOR’S RESPONSIBILITY**
Per the Project Specifications:
- Submit completed Contractor’s Certification Form.
- Submit project specific IAQ Management Plan and digital photos of six SMACNA IAQ measures taken during construction.

**REFERENCES**

- LEED NC 2.2 Credit EQ 3.1 Construction IAQ Management Plan, During Construction
- NY-CHPS Version 1.0 Credit 5.4.1 IAQ During Construction
- NY-CHPS Version 1.0 Credit 5.4.2 Mold Protection

**SCA DESIGN REQUIREMENTS**
None

**SCA STANDARD SPECIFICATIONS**
- S01550 IAQ Requirements
- S01560 Installation Sequence of Finish Materials
- 15891 Metal Ductwork
- 15781 Packaged Heating and Cooling Units
- 15852 Air Handling Units
- 15853 Custom Packaged Rooftop Heating and Cooling Units (VAV)
- 15854 Custom Packaged Rooftop Heating and Cooling Units (CV)
- 15855 Commercial Packaged Rooftop Heating and Cooling Units
- 15885 Air Filters

**SCA STANDARD DETAILS**
None

**OTHER REFERENCES**
- ASHRAE 52.9-1999
### INTENT

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

This credit is required for all projects.

### REQUIREMENTS

LEED describes several alternate methods of flushing out the building at the completion of construction. After construction ends, but prior to occupancy and with all interior finishes installed, perform a building full flush-out. Supply the total air volume of 14,000 cubic foot of outdoor air per square foot of floor area prior to occupancy maintaining an internal temperature higher than 60 °F dry bulb and relative humidity no higher than 60%.

If there is not enough time for full flush-out in the construction schedule, the space may be occupied following delivery of a minimum of 3,500 cubic foot of outdoor air per square foot of floor area to the space. Once the school is occupied, it shall be ventilated at a rate of 0.30 cubic feet per minute per square foot of outside air or the design minimum outside air rate, whichever is greatest. During each day of the flush-out period, ventilation shall begin a minimum of three hours prior to occupancy and continue during occupancy and shall continue until a total of 14,000 cubic square foot of outside air has been delivered to the space.

### BEST PRACTICES AND IMPLEMENTATION

The SCA specifications include Section S01550, Indoor Air Quality Requirements. For a typical IS/HS, the full 14,000 cubic feet of outdoor air during full flush-out prior to occupancy was calculated to take over 3 weeks, whereas the 3,500 cubic feet of outdoor air for flush-out was estimated to take approximately a third of that time.

The Commissioning agent shall verify that the IAQ Management Plan proposed by the Contractor is acceptable. The Commissioning agent shall also verify that the actual procedures used to accomplish this credit have been met, including direct verification by visual inspection of the CFM values on the BMS workstations.

The quantity of outside air delivered shall be verified through the BMS and shall include, in the aggregate, the total of all outside air flows as measured by the outside air flow stations.
**DESIGN DEVELOPMENT**

**ENGINEER’S RESPONSIBILITY**
- Submit a narrative summarizing the design approach for credit compliance and identifying applicable SCA standards to be incorporated into the design documents.

**60% CONSTRUCTION DOCUMENTS**

**ENGINEER’S RESPONSIBILITY**
- Incorporate credit requirements for IAQ Management Plan in the construction documents.

**100% CONSTRUCTION DOCUMENTS**

**ENGINEER’S RESPONSIBILITY**
- No credit submittal

**CONSTRUCTION**

**CONTRACTOR’S RESPONSIBILITY**
Per the Project Specifications:
- Submit Contractor Certification Form.
- Submit a narrative describing the project’s specific flush-out method procedures.
- Indicate flush-out period on the construction schedule.
- Submit calculations to determine the total volume of outside air required to comply with the flush-out requirement, and the required amount of time to deliver this amount of air (at a minimum position of the designed air flow rate per HVAC unit).

**REFERENCES**

- LEED-NC 2.2 Credit EQ 3.2
  Construction IAQ Management Plan, Before Occupancy
- NY-CHPS Credit 5.4.7 and 5.4.8
- SMACNA - IAQ
- SCA DESIGN REQUIREMENTS
  None
- SCA STANDARD SPECIFICATIONS
  S01550 Indoor Air Quality Requirements
- SCA STANDARD DETAILS
  None
- OTHER REFERENCES
  Indoor Air Quality – design tools for schools:
  http://www.epa.gov/iaq/schooldesign/controlling.html
  Air Quality Sciences Resource Center:
  http://www.aerias.org
  Sheet Metal and Air Conditioning Contractors’ National Association:
  www.smacna.org
Reduce the quantity of indoor air contaminants that are odorous, irritating and/or harmful to the comfort and well being of installers and occupants.

This credit is required for all projects.

All adhesives and sealants used on the interior of the building (defined as inside of the weatherproofing system and applied on-site) shall comply with the requirements of the following reference standards:

Adhesives, Sealants and Sealant Primers: South Coast Air Quality Management District (SCAQMD) Rule #1168. VOC limits are listed in the table below and correspond to an effective date of July 1, 2005, and rule amendment date of January 7, 2005.


The SCA Standard Specifications specify low-emitting adhesives and sealants and require Contractors to submit documentation of VOC content.

The limits listed below are included in specification section G01600, Material and Equipment. These limits are equal to or more stringent than current New York State VOC limits.

Any adhesives and sealants added to a specific project’s specifications must meet these low VOC requirements including products in MEP, structural and architectural sections.

Design teams must review Contractor’s construction submittals and include VOC information on the Low-Emitting Material - Summary Form.

### SCAQMD VOC Limits - 1/7/05

<table>
<thead>
<tr>
<th>Application</th>
<th>VOC Limit (g/L less water)</th>
<th>VOC Limit (g/L less water)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Architectural Applications</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Indoor Carpet Adhesives</td>
<td>50</td>
<td></td>
</tr>
<tr>
<td>Carpet Pad Adhesives</td>
<td>50</td>
<td></td>
</tr>
<tr>
<td>Wood Flooring Adhesives</td>
<td>100</td>
<td></td>
</tr>
<tr>
<td>Rubber Floor Adhesives</td>
<td>60</td>
<td></td>
</tr>
<tr>
<td>Subfloor Adhesives</td>
<td>50</td>
<td></td>
</tr>
<tr>
<td>Ceramic Tile Adhesives</td>
<td>65</td>
<td></td>
</tr>
<tr>
<td>VCT &amp; Asphalt Adhesives</td>
<td>50</td>
<td></td>
</tr>
<tr>
<td>Drywall &amp; Panel Adhesives</td>
<td>50</td>
<td></td>
</tr>
<tr>
<td>Cove Base Adhesives</td>
<td>50</td>
<td></td>
</tr>
<tr>
<td>Multipurpose Construction Adhesives</td>
<td>70</td>
<td></td>
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<tr>
<td>Structural Glazing Adhesives</td>
<td>100</td>
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<tr>
<td><strong>Specialty Applications</strong></td>
<td></td>
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<tr>
<td>PVC Welding</td>
<td>519</td>
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<tr>
<td>CPVC Welding</td>
<td>490</td>
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<tr>
<td>ABS Welding</td>
<td>325</td>
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</tr>
<tr>
<td>Plastic Cement Welding</td>
<td>250</td>
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<tr>
<td>Adhesive Primer for Plastic</td>
<td>550</td>
<td></td>
</tr>
<tr>
<td>Contact Adhesive</td>
<td>80</td>
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<tr>
<td>Special Purpose Contact Adhesive</td>
<td>250</td>
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<tr>
<td>Structural Wood Member Adhesive</td>
<td>140</td>
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<tr>
<td>Sheet Applied Rubber Lining Operations</td>
<td>850</td>
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<tr>
<td>Top &amp; Trim Adhesive</td>
<td>250</td>
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<tr>
<td><strong>Sealant Applications</strong></td>
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<tr>
<td>Architectural</td>
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<tr>
<td>Architectural Non Porous</td>
<td>250</td>
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<tr>
<td>Architectural Porous</td>
<td>775</td>
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<tr>
<td>Nonmembrane Roof</td>
<td>300</td>
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<tr>
<td>Roadway</td>
<td>250</td>
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<tr>
<td>Single-Ply Roof Membrane</td>
<td>450</td>
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<tr>
<td>Other</td>
<td>420</td>
<td></td>
</tr>
</tbody>
</table>

### Aerosol Adhesives VOC Limits

<table>
<thead>
<tr>
<th>Application</th>
<th>VOC Limit (g/L less water)</th>
</tr>
</thead>
<tbody>
<tr>
<td>General Purpose Mist Spray</td>
<td>65%</td>
</tr>
<tr>
<td>General Purpose Web Spray</td>
<td>55%</td>
</tr>
<tr>
<td>Special Purpose (all types)</td>
<td>70%</td>
</tr>
<tr>
<td>DESIGN DEVELOPMENT</td>
<td>REFERENCES</td>
</tr>
<tr>
<td>--------------------</td>
<td>------------</td>
</tr>
<tr>
<td><strong>ARCHITECT’S RESPONSIBILITY</strong></td>
<td>LEED-NC 2.2 Credit EQ 4.1 Low- Emitting Materials, Adhesives and Sealants</td>
</tr>
<tr>
<td>• Submit a narrative summarizing the design approach for credit compliance and identifying applicable SCA standards to be incorporated into the design documents.</td>
<td><strong>SCA DESIGN REQUIREMENTS</strong></td>
</tr>
<tr>
<td></td>
<td>None</td>
</tr>
<tr>
<td><strong>60% CONSTRUCTION DOCUMENTS</strong></td>
<td><strong>SCA STANDARD SPECIFICATIONS</strong></td>
</tr>
<tr>
<td><strong>ARCHITECT’S RESPONSIBILITY</strong></td>
<td>References throughout specifications G01600 Material and Equipment 07900 Joint Sealers 09860 Graffiti Resistant Coatings 15401 Supplemental General Requirements 15440 Plumbing Fixtures 15891 Metal Ductwork 15501 Basic HVAC Requirements</td>
</tr>
<tr>
<td>• Incorporate credit requirements in construction documents.</td>
<td><strong>SCA STANDARD DETAILS</strong></td>
</tr>
<tr>
<td></td>
<td>None</td>
</tr>
<tr>
<td><strong>100% CONSTRUCTION DOCUMENTS</strong></td>
<td><strong>OTHER REFERENCES</strong></td>
</tr>
<tr>
<td><strong>CONSTRUCTION</strong></td>
<td>Green Seal Standards and Certification for Commercial Adhesives: <a href="http://www.greenseal.org/certification/standards/commercialadhesives.cfm">http://www.greenseal.org/certification/standards/commercialadhesives.cfm</a></td>
</tr>
<tr>
<td><strong>ARCHITECT’S RESPONSIBILITY</strong></td>
<td>NYS Department of Environmental Conservation VOC limits: <a href="http://www.dec.state.ny.us/website/regs/part205.html">http://www.dec.state.ny.us/website/regs/part205.html</a></td>
</tr>
<tr>
<td>• Submit Low-Emitting Materials - Summary Form based on documentation submitted by Contractor.</td>
<td>• Submit Certification Form with completed information for this credit.</td>
</tr>
</tbody>
</table>
## INTENT

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

This credit is required for all projects.

## REQUIREMENTS

Paints and coatings used on the interior of building (defined as inside of the weatherproofing system and applied on-site) shall comply with the following criteria:

<table>
<thead>
<tr>
<th>Paints and Coatings used on the Interior of Building</th>
</tr>
</thead>
<tbody>
<tr>
<td>Architectural Paints, Coatings and Primers applied to Interior Walls and Ceilings</td>
</tr>
<tr>
<td>Anti-Corrosive and Anti-Rust Paints applied to Interior Ferrous Metal Substrates</td>
</tr>
<tr>
<td>Clear Wood Finishes, Floor Coatings, Stains, Sealers, and Shellacs applied to Interior Elements</td>
</tr>
<tr>
<td>SCAQMD Rule 1113 South Coast Air Quality Management District, Architectural Coatings, 1/1/2004</td>
</tr>
</tbody>
</table>

## BEST PRACTICES AND IMPLEMENTATION

The SCA Standard Specifications specify low-emitting paints and coatings and require Contractors to submit documentation of VOC content. The limits in the adjacent chart are included in specification section G01600, Material and Equipment. These limits are equal to or more stringent than current New York State VOC limits.

Any paints and coatings added to a specific project’s specifications must meet these low VOC requirements including products in MEP, structural and architectural sections.

Design teams must review Contractor’s construction submittals and include VOC information on the Low-Emitting Material - Summary Form.
**DESIGN DEVELOPMENT**

**ARCHITECT’S RESPONSIBILITY**
- Submit a narrative summarizing the design approach for credit compliance and identifying applicable SCA standards to be incorporated into the design documents.

**60% CONSTRUCTION DOCUMENTS**

**ARCHITECT’S RESPONSIBILITY**
- Incorporate credit requirements in construction documents.

**100% CONSTRUCTION DOCUMENTS**

No credit submittal.

**CONSTRUCTION**

**ARCHITECT’S RESPONSIBILITY**
- Submit Low-Emitting Materials - Summary Form based on documentation submitted by Contractor.
- Submit Certification Form with completed information for this credit.

---

**REFERENCES**

- **LEED-NC 2.2 Credit EQ 4.2**
  - Low-Emitting Materials, Paints and Coatings

- **SCA DESIGN REQUIREMENTS**
  - None

- **SCA STANDARD SPECIFICATIONS**
  - References throughout specifications
  - 01600 Material and Equipment

- **SCA STANDARD DETAILS**
  - None

- **OTHER REFERENCES**
  - Green Seal Standards and Certification for Paints:
    - [http://www.greenseal.org/certification/standards/paints.cfm](http://www.greenseal.org/certification/standards/paints.cfm)
  - Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers, by the California Department of Health Services:
    - [www.aqmd.gov/rules](http://www.aqmd.gov/rules)
  - NY State VOC limits for architectural coatings:
    - [http://www.dec.state.ny.us/website/regs/part205.html](http://www.dec.state.ny.us/website/regs/part205.html)
### Q3.3R LOW-EMITTING MATERIALS, CARPET SYSTEMS

<table>
<thead>
<tr>
<th>INTENT</th>
<th>REQUIREMENTS</th>
<th>BEST PRACTICES AND IMPLEMENTATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reduce the quantity of indoor air contaminants that are odorous, irritating and/or harmful to the comfort and well-being of installers and occupants.</td>
<td>All carpet installed in the building interior shall meet the testing and product requirements of the Carpet and Rug Institute’s Green Label Plus program.</td>
<td>The SCA Standard Specifications specify low-emitting carpet and carpet pad complying with this credits requirements. New York State DEC does not currently include VOC limits for carpet or carpet pad.</td>
</tr>
<tr>
<td>This credit is required for all projects.</td>
<td>All carpet cushion installed in the building interior shall meet the requirements of the Carpet and Rug Institute’s Green Label program.</td>
<td>Design Teams must specify complying products. Carpets complying with this standard can be found on referenced Carpet and Rug Institute website.</td>
</tr>
<tr>
<td></td>
<td>All carpet adhesive shall meet the requirements of Q3.1 VOC limit of 50g/L.</td>
<td>Design teams must review Contractor’s construction submittals and include VOC information on the Low-Emitting Material - Summary Form.</td>
</tr>
<tr>
<td></td>
<td>This credit will not be achieved if there is no carpet in the building. School projects to which this guide applies typically include carpet.</td>
<td></td>
</tr>
</tbody>
</table>
## Credit Submittals

<table>
<thead>
<tr>
<th>Design Development</th>
<th>References</th>
</tr>
</thead>
<tbody>
<tr>
<td>Architect’s Responsibility</td>
<td>LEED-NC 2.2 Credit EQ 4.3 Low-Emitting Materials, Carpet Systems</td>
</tr>
<tr>
<td>• Submit a narrative summarizing the design approach for credit compliance and identifying applicable SCA standards to be incorporated into the design documents.</td>
<td>SCA Design Requirements</td>
</tr>
<tr>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>SCA Standard Specifications</td>
<td>SCA Standard Details</td>
</tr>
<tr>
<td>G01600 Material and Equipment 09680 Carpet</td>
<td>None</td>
</tr>
<tr>
<td>Other References</td>
<td>Other References</td>
</tr>
<tr>
<td>The Carpet and Rug Institute: <a href="http://www.carpet-rug.org">www.carpet-rug.org</a></td>
<td></td>
</tr>
</tbody>
</table>

## 60% Construction Documents

<table>
<thead>
<tr>
<th>Architect’s Responsibility</th>
<th>Other References</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Incorporate credit requirements in construction documents.</td>
<td>The Carpet and Rug Institute: <a href="http://www.carpet-rug.org">www.carpet-rug.org</a></td>
</tr>
</tbody>
</table>

## 100% Construction Documents

<table>
<thead>
<tr>
<th>Architect’s Responsibility</th>
<th>Other References</th>
</tr>
</thead>
<tbody>
<tr>
<td>No credit submittal.</td>
<td>The Carpet and Rug Institute: <a href="http://www.carpet-rug.org">www.carpet-rug.org</a></td>
</tr>
</tbody>
</table>

## Construction

<table>
<thead>
<tr>
<th>Architect’s Responsibility</th>
<th>Other References</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Submit Low-Emitting Materials - Summary Form based on documentation submitted by Contractor.</td>
<td>The Carpet and Rug Institute: <a href="http://www.carpet-rug.org">www.carpet-rug.org</a></td>
</tr>
<tr>
<td>• Submit Certification Form with completed information for this credit.</td>
<td>The Carpet and Rug Institute: <a href="http://www.carpet-rug.org">www.carpet-rug.org</a></td>
</tr>
<tr>
<td>INTENT</td>
<td>REQUIREMENTS</td>
</tr>
<tr>
<td>--------</td>
<td>--------------</td>
</tr>
<tr>
<td>Reduce the quantity of indoor air contaminants that are odorous, irritating and/or harmful to the comfort and well-being of installers and occupants. This credit is required for all projects.</td>
<td>Composite wood and agrifiber products used on the interior of the building (defined as inside the weatherproofing system) shall contain no added urea-formaldehyde resins. Laminating adhesives used to fabricate on-site and shop-applied composite wood and agrifiber assemblies shall contain no added urea-formaldehyde resins. Composite wood and agrifiber products include particleboard, medium density fiberboard (MDF), plywood, wheatboard, strawboard, panel substrates and door cores. Materials considered fit out, furniture and equipment (F&amp;E) are not included. Examples of products this credit would apply to include casework, millwork, plywood subflooring, wood doors and mounting boards for MEP panels. Because plywood roof deck for metal roofing is within the vapor barrier this credit would apply to that product as well. This credit does not apply to formwork.</td>
</tr>
</tbody>
</table>
LEED-NC 2.2 Credit   EQ 4.4 – Low-Emitting Materials, Composite Wood & Agrifiber Products

SCA DESIGN REQUIREMENTS
None

SCA STANDARD SPECIFICATIONS
06100 Rough Carpentry
06200 Finish Carpentry
06410 Custom Casework
08210 Wood Doors
09590 Wood Flooring
10100 Visual Display Boards
10415 Bulletin Boards
10652 Folding Metal Partitions
12302 Manufactured Wood Casework
12345 Soapstone
12710 Fixed Advance Seating
12761 Wood Bleachers

SCA STANDARD DETAILS
06200 Finish Carpentry
06410 Custom Casework

OTHER REFERENCES
An update on formaldehyde
www.cpsc.gov/cpscpub/pubs/725.html
### Q4.1R INDOOR CHEMICAL & POLLUTANT SOURCE CONTROL

<table>
<thead>
<tr>
<th>INTENT</th>
<th>REQUIREMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reduce exposure of building occupants to potentially hazardous particulates and chemical pollutants.</td>
<td>Design to reduce and control pollutant entry into buildings and later cross-contamination of regularly occupied sites.</td>
</tr>
<tr>
<td>This credit is required for all projects.</td>
<td>Employ permanent entryway systems at least six feet long in the primary direction of travel to capture dirt and particulates from entering the building at all entryways that are directly connected to the outdoors. Acceptable entryway systems include permanently installed grates, grilles or slotted systems that allow for cleaning underneath. Qualifying entryways are those that serve as regular entry points for students or staff.</td>
</tr>
<tr>
<td></td>
<td>Where hazardous gases or chemicals may be present or are used (including Science Labs, Janitor’s Sink Closets, Grounds Equipment Storeroom, Receiving and General Storage, copying/printing rooms and garage areas), exhaust each space sufficiently to create negative pressure with respect to adjacent spaces with the doors to the room closed. For each of these spaces, provide self-closing doors and deck-to-deck partitions or a hard lid ceiling. The exhaust rate shall be designed for at least 0.50 cubic foot per square foot, with no air re-circulation. Any make up air provided in the area, must be a minimum of 10% less than the exhaust air.</td>
</tr>
<tr>
<td></td>
<td>Provide occupied areas with air filtration media that provides a Minimum Efficiency Reporting Value (MERV) of 13 or better. Unit ventilator filters shall have a MERV of a minimum of 7 (consistent with NY-CHPS requirements). Filtration should be applied to both return and outside air that is to be delivered as supply air.</td>
</tr>
</tbody>
</table>
Comply with SCA Design Requirements and Standard Specifications.

**DESIGN DEVELOPMENT**

**ARCHITECT AND HVAC ENGINEER’S RESPONSIBILITY**

- Submit a narrative summarizing the design approach for credit compliance and identifying applicable SCA standards to be incorporated into the design documents. List designated entryways and any special circumstances or non-standard compliance paths taken by the project.

**60% CONSTRUCTION DOCUMENTS**

**ARCHITECT AND HVAC ENGINEER’S RESPONSIBILITY**

- Incorporate SCA’s requirements in construction documents.

**100% CONSTRUCTION DOCUMENTS**

**ARCHITECT AND HVAC ENGINEER’S RESPONSIBILITY**

- Submit Certification Form with completed information for this credit.
- Submit updated documentation as necessary.
- Submit a written statement that the installed filters have a MERV rating of 13 or better (7 or better for unit ventilators). Provide a listing of the installed filters and their associated MERV ratings.

**CONSTRUCTION**

**CONTRACTOR’S RESPONSIBILITY**

- Submit signed and sealed air balancing report and statement that the installation meets the design criteria as specified.

**LEED-NC 2.2 Credit EQ 5**

Indoor Chemical & Pollutant Source Control

**NYCHPS Version 1 Credit 5.3.3**

Filter Efficiency

**SCA DESIGN REQUIREMENTS**

1.3.4.1 Entrances and Exits
6.2.0 General Overview of Heating Ventilation and Air Conditioning Systems
6.2.28 HVAC Design Requirements for Special Spaces
6.2.8 Wardrobe Locker Ventilation

**SCA STANDARD SPECIFICATIONS**

12690 Foot Grilles
15781 Packaged Heating and Cooling Units
15852 Air Handling Units
15853 Custom Packaged Rooftop Heating and Cooling Units (Variable Air Volume System)
15854 Custom Packaged Rooftop Heating and Cooling Units (Constant Volume System)
15855 Commercial Packaged Rooftop Heating and Cooling Units
15857 Unit Ventilator

**SCA STANDARD DETAILS**

None

**OTHER REFERENCES**

Janitorial products pollution prevention: http://www.westp2net.org/Janitorial/jp4.cfm

EPA green cleaning product information: www.epa.gov/opptintr/epp

ASHRAE 62.1-2004, Table 6-4
Avoid accumulation of carbon monoxide from pilot lights that can cause dangerous air quality conditions for staff and students by using electric ignition stoves.

This credit is required for all projects.

Install only electric ignitions for all gas-fired cooking appliances for which electric ignitions are available.

The SCA Standard Specifications require electric ignition on cooking equipment for which this feature is available. Some equipment such as sectional ovens, gas deck type and the double deck ovens are not available with electric ignition.

The SCA Standard Specifications and NYC Local Law 7 of 2004 requires the installation of carbon monoxide detectors in kitchens that contain gas-operated cooking equipment.
DESIGN DEVELOPMENT

- Submit a narrative identifying applicable SCA standards to be incorporated into the design documents.

60% CONSTRUCTION DOCUMENTS
ARCHITECT’S RESPONSIBILITY
- Incorporate SCA’s requirements in construction documents.

100% CONSTRUCTION DOCUMENTS
ARCHITECT’S RESPONSIBILITY
- Submit Certification Form with completed information for this credit.
- Submit updated documentation as necessary.

CONSTRUCTION
No credit submittal.

REFERENCES
NY-CHPS Version 1.0 Credit 5.3.5 Electric Ignition Stoves

SCA DESIGN REQUIREMENTS
6.2.17 Gas and Carbon Monoxide Leak Detection and Alarm Systems

SCA STANDARD SPECIFICATIONS
11400 Food Service Equipment
11450 Domestic Type Equipment
11452 Culinary Arts Lab Equipment
15595 Gas Leak/Carbon Monoxide Detection Equipment

SCA STANDARD DETAILS
None

OTHER REFERENCES
None
**Q4.3R PROVIDE HEPA VACUUMS**

<table>
<thead>
<tr>
<th>INTENT</th>
<th>REQUIREMENTS</th>
<th>BEST PRACTICES AND IMPLEMENTATION</th>
</tr>
</thead>
</table>
| Reduce indoor airborne dust levels during cleaning activities.  
This credit is required for all projects. | High Efficiency Particulate Arrestor (HEPA) vacuums shall be provided by throught the SCA/F&E Unit as part of the initial equipment for the school.  
Obtain a written statement from the SCA/F&E Unit to confirm that HEPA vacuums are included in this project’s equipment list. | HEPA vacuums are on the Custodial Initial Equipment list so they are part of the entitlement package for each new school or major modernization and renovation. |
**CREDIT SUBMITTALS**

**DESIGN DEVELOPMENT**
- Submit a narrative identifying applicable SCA standards to be incorporated into the design documents.

**60% CONSTRUCTION DOCUMENTS**
No credit submittal.

**100% CONSTRUCTION DOCUMENTS**

**ARCHITECT’S RESPONSIBILITY**
- Submit Certification Form with completed information for this credit.

**CONSTRUCTION**

**SCA PROJECT MANAGER’S RESPONSIBILITY**
- Confirm custodial equipment list includes HEPA vacuum.

**REFERENCES**

NY-CHPS Version 1.0 Q Credit 6.2.4
Purchase HEPA Vacuums

**SCA DESIGN REQUIREMENTS**
None

**SCA STANDARD SPECIFICATIONS**
None

**SCA STANDARD DETAILS**
None

**OTHER REFERENCES**
None
<table>
<thead>
<tr>
<th>INTENT</th>
<th>REQUIREMENTS</th>
<th>BEST PRACTICES AND IMPLEMENTATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Provide a high level of lighting system control by individual 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.</td>
<td>Provide lighting system controllability in spaces for at least 90% of building occupants to suit task needs and preferences. Provide lighting system controllability for all shared multi-occupant spaces.</td>
<td>SCA Design Requirements and Standard Specifications incorporate standards for lighting controls for shared multi-occupant spaces that comply with this credit’s requirements.</td>
</tr>
<tr>
<td>This credit is required for all projects.</td>
<td>AND</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Provide individual lighting controls at individual offices as appropriate. Individual controls are not required at all offices. General area illumination controls for multi-workstation spaces (such as the General Office) may not be counted toward this credit.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>In schools, this credit can be achieved by following SCA standards for controls by providing controllability at shared group multi-occupancy spaces (i.e., instructional rooms, cafeterias, gyms, libraries, auditorium) and in select individual offices or shared office areas where workstations have task lighting under overhead storage.</td>
<td></td>
</tr>
</tbody>
</table>
LEED-NC 2.2 EQ Credit 6.1
Controllability of Systems, Lighting

SCA DESIGN REQUIREMENTS
7.2.1 Interior Lighting

SCA STANDARD SPECIFICATIONS
16140 Wiring Devices
16145 Lighting Control Devices

SCA STANDARD DETAILS
SCA Room Planning Standards

OTHER REFERENCES
A Field Study of PEM (Personal Environmental Module) Performance in Bank of America’s San Francisco Office Buildings:

DESIGN DEVELOPMENT

ELECTRICAL ENGINEER’S RESPONSIBILITY
• Submit a narrative summarizing the design approach for credit compliance and identifying applicable SCA standards to be incorporated into design documents.

60% CONSTRUCTION DOCUMENTS

ELECTRICAL ENGINEER’S RESPONSIBILITY
• Incorporate requirements in construction documents.
• Submit floor plans indicating quantity of lighting fixtures, control switches for lights, and furniture layouts for every room.

100% CONSTRUCTION DOCUMENTS

ELECTRICAL ENGINEER’S RESPONSIBILITY
• Submit Certification Form with completed information for this credit.
• Submit updated documentation as necessary.

CONSTRUCTION
No credit submittal.
<table>
<thead>
<tr>
<th>INTENT</th>
<th>REQUIREMENTS</th>
<th>BEST PRACTICES AND IMPLEMENTATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Provide a thermal comfort control system adjusted by individual occupants or specific groups in multi-occupant spaces (i.e., classrooms or conference areas) to promote the productivity, comfort and well-being of building occupants. This credit is required for all projects.</td>
<td>Provide comfort controls for 50% of building occupants. In schools, this credit can be achieved by following SCA standards for thermal comfort controls by providing controllability at shared group multi-occupancy spaces (i.e., instructional rooms, cafeterias, gyms, libraries, auditoria) and in select office areas. Operable windows can be used in lieu of individual comfort controls for occupants of areas that are 20 feet inside of and 10 feet to either side of the operable part of the window. The areas of operable window must meet the requirements of ASHRAE 62.1-2004, paragraph 5.1, Natural Ventilation, including an operable area that is a minimum of 4% of the net occupiable floor area. ASHRAE Standard 55-2004 lists the primary factors of thermal comfort as: air temperature, radiant temperature asymmetry, air speed and humidity. Comfort system control, for the purposes of this credit, is defined as the provision of control over at least one of these primary factors in the occupant's local environment.</td>
<td>SCA Design Requirements and Standard Specifications require temperature controls for shared group multi-occupancy spaces. Additionally, per SCA standards, typical classrooms must have operable windows. Consider locating shared administrative office areas (which would not typically have individual thermostat controls) at perimeter so operable windows provide thermal comfort control for a greater number of staff.</td>
</tr>
</tbody>
</table>
CONTROLLABILITY OF SYSTEMS, THERMAL COMFORT: CREDIT Q5.2r

**CREDIT SUBMITTALS**

**REFERENCES**

**DESIGN DEVELOPMENT**

**HVAC ENGINEER’S RESPONSIBILITY**
- Submit a narrative summarizing the design approach for credit compliance and identifying applicable SCA standards to be incorporated into design documents.

**60% CONSTRUCTION DOCUMENTS**

**HVAC ENGINEER’S RESPONSIBILITY**
- Incorporate SCA’s requirements in construction documents.
- Submit floor plans indicating locations of temperature control devices.

**100% CONSTRUCTION DOCUMENTS**

**MEP ENGINEER’S RESPONSIBILITY**
- Submit Certification Form with completed information for this credit.
- Submit updated documentation as necessary.

**CONSTRUCTION**
No credit submittal.

**LEED-NC 2.2 Credit EQ 6.2**
Controllability of Systems, Thermal Comfort

**SCA DESIGN REQUIREMENTS**
6.2.0 General Overview of Heating Ventilation and Air Conditioning Systems
6.2.1 HVAC Unit Centralization and Coordination
6.2.3 Non-Assembly Spaces (Classrooms, Offices, etc.)
6.2.4 Public Assembly Spaces

**SCA STANDARD SPECIFICATIONS**
15970 Temperature Control System
15985 Sequence of Operations

**SCA STANDARD DETAILS**
Automatic temperature control standard details

**OTHER REFERENCES**
Center for the Built Environment at Berkeley:
www.cbe.berkeley.edu
## THERMAL COMFORT, COMPLY WITH ASHRAE 55-2004

<table>
<thead>
<tr>
<th>INTENT</th>
<th>REQUIREMENTS</th>
<th>BEST PRACTICES AND IMPLEMENTATION</th>
</tr>
</thead>
</table>
| Provide a comfortable thermal environment that supports the productivity and well-being of building occupants. | Design HVAC systems and the building envelope to meet ASHRAE Standard 55-2004, Thermal Comfort Conditions for Human Occupancy. Demonstrate design compliance by providing:  
- Design parameters in HVAC drawings.  
- System capacities necessary to attain the design indoor conditions capacities to be indicated on equipment schedules.  
- Floor plan layouts indicating locations of air outlets (i.e., diffusers, registers), terminal units (i.e., VAV boxes), and air capacities (CFMs)  
- Floor plans coordinating location of air outlets, terminal units and control devices with architectural layouts  
- Floor plans indicating control devices and the terminal unit being controlled, and specifications indicating performance adjustments criteria for control devices.  
- HVAC drawings showing control network architecture and control diagrams for every typical system.  
- In the specifications, incorporate requirements for the Contractor to provide the owner with maintenance and operating manuals.  
- Control specifications indicating specific limits in the adjustment of manual controls.  
- HVAC calculations. | The SCA standards incorporate requirements for prototypical HVAC systems that allow MEP designs to achieve the credit requirements. |
DESIGN DEVELOPMENT

HVAC ENGINEER’S RESPONSIBILITY

• Submit a narrative summarizing the design approach for credit compliance and identifying applicable SCA standards to be incorporated into design documents.

• Submit a narrative to describe any special circumstances or non-standard compliance paths taken by the project.

60% CONSTRUCTION DOCUMENTS

HVAC ENGINEER’S RESPONSIBILITY

• Incorporate SCA’s requirements in construction documents.

100% CONSTRUCTION DOCUMENTS

HVAC ENGINEER’S RESPONSIBILITY

• Submit Certification Form with completed information for this credit.

• Submit updated documentation as necessary.

CONSTRUCTION

No credit submittal.

REFERENCES

LEED-NC 2.2 Credit EQ 7.1
Thermal Comfort, Comply with ASHRAE 55-2004

ANSI/ASHRAE 55-2004

SCA DESIGN REQUIREMENTS

6.2.0 General Overview of Heating Ventilation and Air Conditioning Systems

6.2.1 HVAC Unit Centralization and Coordination

6.2.3 Non-Assembly Spaces (Classrooms, Offices, etc.)

6.2.4 Public Assembly Spaces

6.2.9 Heating and Cooling Design Parameters (Load Calculations)

6.2.28 HVAC Design Requirement for Special Spaces

6.2.22 Kitchen Ventilation

SCA STANDARD SPECIFICATIONS

15970 Temperature Control System

15985 Sequence of Operations

SCA STANDARD DETAILS

None

OTHER REFERENCES

None
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.

This credit is required, if feasible, for all projects.

While all projects are not required to achieve this credit, all projects must submit documentation to show whether or not the credit is achieved.

While LEED includes Daylight Modeling or calculations as options for documentation, the SCA recommends documenting compliance with calculations.

Glazing Factor Calculations
Achieve a minimum glazing factor of 2% in a minimum of 75% of all regularly occupied areas. A glazing factor is the ratio of interior to exterior illuminance. Like LEED, this rating system uses a simplified method of calculating the glazing factor based on floor area, window area, window geometry, visible light transmittance of the glazing and window height. Regularly occupied areas do not include storage rooms, mechanical rooms or circulation areas.

A spreadsheet calculations form (See Section 5) is attached. Only the square footage associated with the portions of rooms or spaces meeting the minimum illumination requirements can be applied toward the 75% of total area calculation required to qualify for this credit.

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 where unwanted glare can negatively affect the program of the room.

In all cases, provide daylight redirection and/or glare control devices to avoid high-contrast situations that could impede visual tasks.

Daylighting Diagram

- Regularly Occupied Areas Meeting Minimum Illumination Requirements
- Regularly Occupied Areas Not Meeting Minimum Illumination Requirements
- Mechanical / Circulation / Storage
The SCA specifications include enhanced glazing products and manual shades for glare control to aid compliance with credit requirements. Standard classroom layouts are consistent with achieving this credit in classrooms.

To achieve this credit, consider building orientation, shallow floor plates and lower visible light transmittance values for glazing.

Measures for glare control that go beyond the SCA standard measures for addressing glare control will be evaluated on a project-by-project basis.

The SCA has not made this credit a requirement for all projects because of concerns about the limited applicability to modernization and renovation projects. For schools where a basement is cost effective, this credit may not be achievable.

This credit has been incorporated in the NYC Green Schools Rating System to document to what extent this requirement is applicable and appropriate for new school projects.

**DESIGN DEVELOPMENT**

**ARCHITECT’S RESPONSIBILITY**

- Submit a narrative summarizing the design approach for credit compliance and identifying applicable SCA standards to be incorporated into design documents. Include a summary of occupancy areas that will be excluded from compliance, indicating why daylight would hinder their normal use.

**60% CONSTRUCTION DOCUMENTS**

**ARCHITECT’S RESPONSIBILITY**

- Submit Daylight and Views Calculations Form to indicate the percentage of spaces that comply.
- Submit plan demonstrating calculations results graphically.

**100% CONSTRUCTION DOCUMENTS**

**ARCHITECT’S RESPONSIBILITY**

- Submit Certification Form with completed information for this credit.
- Submit updated documentation as necessary.

**CONSTRUCTION**

No credit submittal.

**REFERENCES**

LEED-NC 2.2 Credit EQ 8.1
Daylight & Views, Daylight 75% of Spaces

SCA DESIGN REQUIREMENTS
1.3.1.1 Building Location and Orientation

SCA STANDARD SPECIFICATIONS
08800 Glazing
12500 Window Shades

SCA STANDARD DETAILS
None

**OTHER REFERENCES**

Radiance Synthetic Imaging System: http://radsite.lbl.gov/radiance

Daylighting design guidelines: www.wbdg.org/design/electriclighting.php?r=Q
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.

This credit is required, if feasible, for all projects.

While all projects are not required to achieve this credit, all projects must submit documentation to show whether or not the credit is achieved.

While LEED includes Daylight Modeling or calculations as options for documentation, the SCA recommends documenting compliance with calculations.

Achieve direct line of sight to the outdoor environment via vision glazing between 2’-6” and 7’-6” above finish floor for building occupants in 90% of all regularly occupied areas. Regularly occupied areas do not include storage rooms, mechanical rooms or circulation areas.

Determine the area with direct line of sight by totaling the regularly occupied square footage that meets the following criteria:

In plan view, the area is within sight lines drawn from perimeter vision glazing. In section view, a direct sight line can be drawn from the area to perimeter vision glazing.

Line of sight may be drawn through interior glazing. For multi-occupant spaces, the actual square footage with direct line of sight to perimeter vision glazing is counted. For private offices, the entire square footage of the office can be counted if 75% or more of the area has direct line of sight to perimeter vision glazing.

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 gymnasia.
The SCA specifications include enhanced glazing products and manual shades for glare control to aid compliance with credit requirements. Standard classroom layouts are consistent with achieving this credit in classrooms.

With this credit the SCA is seeking to document whether the variety of school projects comply and to what extent.

In office areas, consider lower partition height and interior glazing.

**DESIGN DEVELOPMENT**

**ARCHITECT’S RESPONSIBILITY**

- Submit a narrative summarizing the design approach for credit compliance and identifying applicable SCA standards to be incorporated into design documents. Include a summary of occupancy areas that will be excluded from compliance, indicating why complying fenestration would hinder their normal use.

**60% CONSTRUCTION DOCUMENTS**

**ARCHITECT’S RESPONSIBILITY**

- Incorporate SCA’s requirements in construction documents.
- Determine if design as developed complies. Submit calculation spreadsheet form to indicate percentage of spaces that comply.
- Submit annotated drawings showing the line of sight from interior spaces through exterior windows in both plan and sectional views.

**100% CONSTRUCTION DOCUMENTS**

**ARCHITECT’S RESPONSIBILITY**

- Submit Certification Form with completed information for this credit.
- Submit updated documentation as necessary.

**CONSTRUCTION**

No credit submittal.

---

**REFERENCES**

LEED-NC 2.2 Credit EQ 8.2
Daylight & Views, 90% of Spaces

**SCA DESIGN REQUIREMENTS**

1.3.1.1 Building Location and Orientation

**SCA STANDARD SPECIFICATIONS**

None

**SCA STANDARD DETAILS**

None

**OTHER REFERENCES**

None

---

**BEST PRACTICES AND IMPLEMENTATION**

**CREDIT SUBMITTALS**

**REFERENCES**
### INTENT

Provide pendant-mounted, glare-free ambient lighting in classrooms, improving the visual environment for students and teachers to read, write and interact.

This credit is required, if feasible, for all projects.

### REQUIREMENTS

Install an artificial lighting system to enhance occupants’ visual performance with pendant-mounted direct-indirect, semi-indirect or totally indirect luminaires mounted parallel to the window wall. Luminaires shall use T-8 fluorescent lamps with a minimum color-rendering index of 82.

Energy efficient, direct-indirect lighting reduces lighting power density (LPD) by using less energy to deliver a better quality of light to the space.

This credit applies to renovations where the bottom of fixtures is at 9 feet or higher above the finished floor.

The credit also applies to select new school projects as reviewed with the SCA Design Manager. The criteria for applicability of this criteria is acceptability of the height to the bottom of the fixture above the finished floor. At Early Childhood Centers, the bottom of pendant fixtures may be a minimum of 8’-6” above the floor.

### BEST PRACTICES AND IMPLEMENTATION

SCA Standards for interior lighting layouts incorporates fixture and layout requirements that will assist in achieving this credit.

Design Requirement 7.2.1 includes specific dimensions for the acceptable distance between the ceiling and the bottom of light fixtures.

Ceiling 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.

This credit is generally feasible for renovation, modernization and ECC projects.
**CREDIT SUBMITTALS**

**DESIGN DEVELOPMENT**

**ELECTRICAL ENGINEER'S RESPONSIBILITY**

- Submit a narrative describing whether this credit is feasible. For projects where it is feasible, summarize the design approach for credit compliance and identify applicable SCA standards to be incorporated into design documents.
- Submit a narrative to describe any special circumstances or non-standard compliance paths taken by the project.

**60% CONSTRUCTION DOCUMENTS**

**ELECTRICAL ENGINEER'S RESPONSIBILITY**

- Incorporate SCA’s requirements in construction documents including the lighting layouts and lighting fixture schedules.
- Submit lighting level (photometric) calculations for typical and non-typical areas.

**100% CONSTRUCTION DOCUMENTS**

**ELECTRICAL ENGINEER'S RESPONSIBILITY**

- Submit Certification Form with completed information for this credit.
- Submit updated documentation as necessary.

**CONSTRUCTION**

No credit submittal.

---

**REFERENCES**

NY-CHPS Version 1.0
Credit 5.2.1
Visual Performance, Artificial Indirect Lighting

**SCA DESIGN REQUIREMENTS**

7.2.1 Interior Lighting

**SCA STANDARD SPECIFICATIONS**

16500 Interior Building Lighting
16501 Lamps, Ballasts and Accessories

**SCA STANDARD DETAILS**

None

**OTHER REFERENCES**

Advanced Lighting Guidelines: 2003 Edition:
http://www.newbuildings.org/lighting.htm

DesignLights™ Consortium Classroom Knowhow™ guide:
http://www.designlights.org

---

**VISUAL PERFORMANCE, ARTIFICIAL DIRECT-INDIRECT LIGHTING: CREDIT Q7.3**

135
Control background sound levels and reverberation for instructional spaces and reduce noise transfer from adjacent spaces to enhance speech communication in the learning environment.

This credit is required for all projects.

Sound Isolation Tables

<table>
<thead>
<tr>
<th>Adjacent Space</th>
<th>Airborne Sound Isolation, STC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Classroom</td>
<td>50</td>
</tr>
<tr>
<td>Corridor</td>
<td>45*</td>
</tr>
<tr>
<td>Toilets</td>
<td>53</td>
</tr>
<tr>
<td>Music / Dance</td>
<td>60</td>
</tr>
<tr>
<td>Mechanical</td>
<td>60</td>
</tr>
<tr>
<td>Gym</td>
<td>60</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Adjacent Overhead Space</th>
<th>Impact Sound Isolation, IIC**</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overhead space</td>
<td>45</td>
</tr>
<tr>
<td>Music / Dance</td>
<td>60***</td>
</tr>
<tr>
<td>Mechanical</td>
<td>60</td>
</tr>
<tr>
<td>Gym (if overhead)</td>
<td>60***</td>
</tr>
</tbody>
</table>

* Excluding entry doors which shall achieve STC-30
** Impact Insulation Class (IIC) ratings shall apply without carpeting installed on the floor above.
*** See Credit Q8.2

- Confirm that project instructional spaces meet the following requirements:
  - **Background Sound Levels**
    Classrooms shall be designed so that the background sound level does not exceed the following values at any location where a student may be situated:
    - Pre-Kindergarten through 6th Grade Classrooms: 35 dBA.
    - 7th through 12th Grade Classrooms: 40 dBA.
  - **Reverberation Times**
    All classrooms shall have:
    - 0.6-second maximum (unoccupied) mid-frequency (500, 1,000 and 2,000 Hz bands) reverberation times for classrooms with volumes of up to 10,000 ft³; 0.7-second maximum (unoccupied) mid-frequency reverberation time for classrooms of 10,000 to 20,000 ft³; consult a qualified acoustic consultant for requirements for spaces larger than 20,000 ft³.

- **Sound Isolation**
  Design and select classroom exterior façade construction assemblies to achieve STC-50.

  SCA standard windows approximate STC-40 but are not acoustically rated or tested.

- Between instruction rooms and the adjacent spaces, provide construction to yield the degree of sound isolation listed in the tables to the left.

- **Background Sound Levels**
  HVAC systems generally capable of meeting these low background noise level requirements include standard non fan powered VAV boxes with a silencer used in the downstream supply duct system. Successful installations of floor mounted unit ventilators usually require oversizing and slowing fans. Exposed fan coil or unit ventilator equipment can rarely be selected to meet these goals.

- **Reverberation Times**
  Use of a lay-in sound-absorptive ceiling having a minimum NRC/SAA of 0.70 is an effective method for meeting the reverberation time goals in classrooms. On occasion, it may be necessary to provide supplemental sound absorption on upper wall areas should the net area of sound absorptive ceiling be limited by flat-lensed light fixtures or gypsum board soffits.

- **Sound Isolation - Exterior**
  STC-50 exterior walls can be met with CMU and face brick. Lightweight (curtain wall) façade constructions need careful review for sound isolation performance by the acoustical consultant.

- **Sound Isolation - Interior**
  Partition assemblies to meet the required STC ratings have been incorporated into the Design Requirement 1.3.1.9 on Architectural Acoustics and interior partition details. Specific conditions and proximities should be reviewed by the project acoustical consultant.

Outlets and other partition penetrations should be offset.
The project acoustical consultant should also evaluate required measures for classrooms adjacent to the cafeteria.

Impact Insulation Class IIC-45 for instructional/office spaces above classrooms (not gymnasiums, music, dance or auditoria) may be met via use of a concrete slab and a well-sealed suspended lay-in acoustical panel ceiling in the classroom below.

This credit is typically feasible for new construction projects and may apply to some renovation and modernization projects as well. This credit is not feasible for projects using a decoupled HVAC system with floor-mounted unit ventilators.

**DESIGN DEVELOPMENT**

ARCHITECT AND HVAC ENGINEER’S RESPONSIBILITY

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

**60% CONSTRUCTION DOCUMENTS**

ARCHITECT AND HVAC ENGINEER’S RESPONSIBILITY

- Integrate the design criteria into the design documents.
- Submit 60% documents to a qualified acoustical consultant and obtain a report verifying that the project has been designed to meet the relevant requirements.

**100% CONSTRUCTION DOCUMENTS**

ARCHITECT’S RESPONSIBILITY

- Submit 100% documents to a qualified acoustical consultant and obtain confirmation that project design meets the relevant requirements.
- Submit Certification Form with completed information for this credit.
- Submit updated documentation as necessary.

**CONSTRUCTION**

No credit submittal.

**REFERENCES**

LEED-NC 2.2 ID Credit 1.2
Acoustical Requirements
USGBC CIR dated 1/24/05

CHPS Version 1.0 Prerequisite 5.5.1
Minimum Acoustical Performance

CHPS Version 1.0 Credit 5.5.2
Sound Isolation

**SCA DESIGN REQUIREMENTS**

1.3.1.9 Architectural Acoustics
4.1.1 Exterior Masonry Walls
4.3.1 Window Types
5.1.1 Typical Room Finishes
5.2.2 Interior Partitions
5.3.1 Floor Types
5.4.1 Suspended Ceilings
5.5.1 Interior Doors and Frames
6.2.25 HVAC Acoustical Standards

**SCA STANDARD SPECIFICATIONS**

08521 Aluminum D.H. Windows
08522 Aluminum D.H. Windows
08524 Aluminum Projected Windows
09260 Gypsum Board Assemblies
09510 Acoustical Ceilings
15853 Custom Rooftop Units (VAV)
15854 Custom Rooftop Units (CV)
15855 Commercial Rooftop Units
15993 Balancing of Systems
15891 Metal Ductwork
15910 Duct Accessories

**SCA STANDARD DETAILS**

I0926010a Interior Partition Details

**OTHER REFERENCES**


Acoustical Society of America:
http://asa.aip.org/ and http://asa.aip.org/classroom/booklet.html
q8.2 Sound isolation for special spaces

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

This credit is required, if feasible, for all projects.

Provide structural sound-isolation slab construction to isolate the special noise source space from spaces below to yield the degree of sound isolation listed in the table.

<table>
<thead>
<tr>
<th>Special Space</th>
<th>Airborne Sound Isolation (STC)</th>
<th>Impact Sound Isolation (IIC**)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Music / Dance</td>
<td>60</td>
<td>60</td>
</tr>
<tr>
<td>Gym</td>
<td>60</td>
<td>60</td>
</tr>
</tbody>
</table>

** Impact Insulation Class (IIC) ratings shall apply without carpeting installed on the floor above.

Building planning should avoid vertical adjacency of noisy spaces above instructional spaces or offices.

To meet IIC-60 for spaces with high noise levels or impact noise, such as music suites or gymnasiums, that are located over instructional rooms and offices, a special floated concrete floor construction is needed. Adequate floated floor construction comprises a 4-inch thick normal weight concrete slab on isolators with a 2-inch air space to the base slab. The most convenient systems are so-called “jack-up” slab systems available from Kinetics Noise Control, Mason Industries, and Vibration Mountings & Controls.
**CREDIT SUBMITTALS**

<table>
<thead>
<tr>
<th>Category</th>
<th>Responsibilities</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>DESIGN DEVELOPMENT</strong></td>
<td></td>
</tr>
<tr>
<td><strong>ARCHITECT’S RESPONSIBILITIES</strong></td>
<td>• Submit a narrative statement describing whether this credit is applicable.</td>
</tr>
<tr>
<td></td>
<td>• For project where this credit applies, summarize the design approach for</td>
</tr>
<tr>
<td></td>
<td>credit compliance and identify applicable SCA standards to be incorporated into</td>
</tr>
<tr>
<td></td>
<td>design documents.</td>
</tr>
<tr>
<td><strong>60% CONSTRUCTION DOCUMENTS</strong></td>
<td></td>
</tr>
<tr>
<td><strong>ARCHITECT’S RESPONSIBILITIES</strong></td>
<td>• Incorporate requirements in construction documents.</td>
</tr>
<tr>
<td><strong>100% CONSTRUCTION DOCUMENTS</strong></td>
<td></td>
</tr>
<tr>
<td><strong>ARCHITECT’S RESPONSIBILITIES</strong></td>
<td>• Submit Certification Form with completed information for this credit.</td>
</tr>
<tr>
<td></td>
<td>• Submit updated documentation as necessary.</td>
</tr>
<tr>
<td><strong>CONSTRUCTION</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>No credit submittal.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Category</th>
<th>References</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>SOUND ISOLATION FOR SPECIAL SPACES: CREDIT Q8.2</strong></td>
<td>Reference NY-CHPS Version 1.0</td>
</tr>
<tr>
<td></td>
<td>Credit 5.5.2 — Sound Isolation</td>
</tr>
<tr>
<td><strong>SCA DESIGN REQUIREMENTS</strong></td>
<td>None</td>
</tr>
<tr>
<td><strong>SCA STANDARD SPECIFICATIONS</strong></td>
<td>None</td>
</tr>
<tr>
<td><strong>SCA STANDARD DETAILS</strong></td>
<td>None</td>
</tr>
<tr>
<td><strong>OTHER REFERENCES</strong></td>
<td>American National Standard: “Acoustical Performance Criteria,</td>
</tr>
<tr>
<td></td>
<td>Design Requirements, and Guidelines for Schools” (ANSI S12.60-2002)</td>
</tr>
<tr>
<td></td>
<td>National Clearinghouse for Educational Facilities: <a href="http://www.edfacilities.org">http://www.edfacilities.org</a></td>
</tr>
<tr>
<td></td>
<td>html</td>
</tr>
<tr>
<td></td>
<td>American National Standards Institute: <a href="http://www.ansi.org">http://www.ansi.org</a></td>
</tr>
</tbody>
</table>
### ACOUSTIC WINDOWS

<table>
<thead>
<tr>
<th>INTENT</th>
<th>REQUIREMENTS</th>
<th>BEST PRACTICES AND IMPLEMENTATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>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.</td>
<td>Design and select exterior façade construction to achieve STC-40 (minimum) for fenestration and STC-50 for all other façade elements. Higher STC levels for fenestration should be considered on a case-by-case basis as recommended by project acoustical consultant.</td>
<td>Plan the location of instructional spaces away from objectionable noise sources. Consider acoustically improved windows for sites where there are high levels of inbound transportation noise. External wall and fenestration design need careful review for sound isolation performance by a qualified acoustical consultant.</td>
</tr>
<tr>
<td>This credit is required, if feasible, for all projects.</td>
<td>This credit would apply to schools severely impacted by transportation noise sources such as aircraft or elevated trains.</td>
<td></td>
</tr>
</tbody>
</table>
### Design Development

**Architect’s Responsibilities**
- Submit a narrative statement describing whether this credit is applicable. For project where this credit applies, summarize the design approach for credit compliance and identify applicable SCA standards to be incorporated into design documents.

### 60% Construction Documents

**Architect’s Responsibilities**
- Obtain acoustical laboratory test reports from window manufacturers on candidate window assemblies to verify STC ratings on operable assemblies. Submit a report from a qualified acoustical consultant documenting that the façade elements meet the above requirements as a minimum and evaluating the need for improved fenestration performance.

### 100% Construction Documents

**Architect’s Responsibilities**
- Submit Certification Form with completed information for this credit.
- Submit updated documentation as necessary.

### Construction

**Contractor’s Responsibility**
- Provide a report from a qualified acoustical consultant verifying that the relevant requirements have been met.

### ScA Design Requirements

None

### ScA Standard Specifications

<table>
<thead>
<tr>
<th>Item</th>
</tr>
</thead>
<tbody>
<tr>
<td>08521 Aluminum Double Hung - New</td>
</tr>
<tr>
<td>08522 Aluminum Double Hung - Replacement</td>
</tr>
<tr>
<td>08524 Aluminum Hopper Windows</td>
</tr>
</tbody>
</table>

### ScA Standard Details

None

### Other References

- National Clearinghouse for Educational Facilities: http://www.edfacilities.org
- Acoustical Society of America: http://asa.aip.org/classroom/booklet.html
- American National Standards Institute: http://www.ansi.org
This section requires a LEED accredited professional as part of the design team and includes optional credits that may be applied to unique projects when pre-authorized by the SCA.

Optional credits include provisions for vegetated ‘green’ roofs; optimizing energy performance; renewable energy systems; additional sustainable materials and furnishings; daylight harvesting and using the building to inform users about sustainable design features.

The SCA supports the added sustainable benefits afforded by the optional additional credits and will encourage application of these credits for projects that receive special funding and/or have unique conditions that warrant exploration of the alternatives offered by these credits.
<table>
<thead>
<tr>
<th>INTENT</th>
<th>REQUIREMENTS</th>
<th>BEST PRACTICES AND IMPLEMENTATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>To support and encourage the design integration required by an established level of familiarity with LEED, upon which the NYC Green Schools Guide is based, and to facilitate the sustainable design application and certification process for school.</td>
<td>At least one principal participant of the project team shall be a LEED Accredited Professional (AP)</td>
<td>To become a LEED Accredited Professional, the LEED NC Accreditation Exam offered by the United States Green Building Council (USGBC) must be successfully passed and an accreditation issued by USGBC.</td>
</tr>
</tbody>
</table>

This credit is required for all projects.
### DESIGN DEVELOPMENT

**ARCHITECT’S RESPONSIBILITY**

- Submit a narrative listing the names and firm of the LEED Accredited Professional (LEED AP) participating on the Design Team. Include a brief description of the LEED AP’s project role(s).
- Submit a copy of the LEED AP certificate.

**60% CONSTRUCTION DOCUMENTS**

No credit submittal.

**100% CONSTRUCTION DOCUMENTS**

- Submit Certification Form with completed information for this credit.

### CONSTRUCTION

No credit submittal.

---

**REFERENCES**

- LEED NC 2.2 Credit ID 2
- LEED Accredited Professional
- SCA DESIGN REQUIREMENTS
  - None
- SCA STANDARD SPECIFICATIONS
  - None
- SCA STANDARD DETAILS
  - None
- OTHER REFERENCES
  - LEED website: www.usgbc.org

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**OTHER REFERENCES**

- LEED website: www.usgbc.org
Reduce heat islands (thermal gradient differences between developed and undeveloped areas) to minimize impact on microclimate, and human and wildlife habitat.

This credit is optional and may only be pursued with SCA direction/permission.

Option 1:
Use roofing materials having a Solar Reflectance Index (SRI) equal to or greater than 79 for low sloped roofs slope (<2:12), and 29 for steep sloped roofs slope (>2:12) for a minimum of 75% of the roof surface.

OR

Option 2:
Install a vegetated roof for at least 50% of the roof area.

Design Teams should list this credit as being pursued on the Schematic Submission Green Schools Rating System Project Checklist only if the SCA has provided direction to that effect.

Option 1:
With SCA approval, use compliant products for a coated metal roofing. This is not an SCA standard. Note that white gravel does not meet the SRI requirements.

OR

With SCA approval, use roof paver system with an SRI > 79. This option represents a significant added cost and is not an SCA standard. Note that where some roof area is lower than the surrounding building, glare may cause undesirable condition in these adjacent spaces.

Option 2:
With SCA approval, use vegetated-green roof over 50% of the roof area or an area of roof such that the green roof system and SRI compliant area covers 75% of roof area. SCA specifications and details describe green roof for both

Green Roof Installations
stormwater detention and non-detention roof applications.

For sites in areas that do not have a combined sewer, use the modified green roof assembly with interstitial egg crate drainage system to comply with NYC DEP stormwater detention regulations (design stormwater detention systems for 10-year / 24-hour storm events with a maximum allowable water level on the roof of 3 inches). This approach represents a significant added cost and is not an SCA standard. Exclusive use of roof vegetation to meet 100% DEP stormwater detention requirements has not been approved at this time by DEP.

If this credit is achieved with a green roof, projects may also pursue credits: S 3.1 Site Development Protect or Restore Habitat S3.2 Maximize Open Space S4.1 Stormwater Quality A2.2 Stormwater Quantity A6.1 Building as Educational Tool

An extensive green roof system should consist of ‘adapted’ plants - plants that grow well in a given habitat with minimal attention from humans in the form of winter protection, pest protection, water irrigation, or fertilization once root systems are established in the soil.

Provide hose bibb(s) for temporary watering of planted roofs.

**DESIGN DEVELOPMENT**

ARCHITECT’S RESPONSIBILITY

- For projects where the SCA has agreed that this credit may be pursued, indicate specific conditions that make this credit achievable. Summarize what systems are proposed to achieve compliance.

**60% CONSTRUCTION DOCUMENTS**

ARCHITECT’S RESPONSIBILITY

- Submit a diagram showing project roof areas to highlight the location of specific roof materials and/or green roof systems. AND

Option 1

- Submit calculation of total area of installed SRI compliant roofing materials and/or vegetated green roof area expressed as a percentage of total roof areas.
- Submit a listing of installed roofing materials and their SRI values.

OR

Option 2

- Submit calculation of area of installed green roof systems expressed as a percentage of total roof areas.

**100% CONSTRUCTION DOCUMENTS**

ARCHITECT’S RESPONSIBILITY

- Submit Certification Form with completed information for this credit.
- Submit updated documentation as necessary.

**CONSTRUCTION**

DESIGN TEAM’S RESPONSIBILITY

- Review Contractor’s submittals for compliance with credit requirements.

**REFERENCES**

LEED-NC 2.2 Credit SS 7.2
Heat Island Effect: Roof

SCA DESIGN REQUIREMENTS
6.1.11 Stormwater Management

SCA STANDARD SPECIFICATIONS
07610 Sheet Metal Roofing
07561 Fluid Applied Protected Membrane Roofing (Planted Roof)

SCA STANDARD DETAILS
None

OTHER REFERENCES
None
### A2.2 STORMWATER DESIGN, QUANTITY CONTROL

<table>
<thead>
<tr>
<th>INTENT</th>
<th>REQUIREMENTS</th>
<th>BEST PRACTICES AND IMPLEMENTATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Limit disruption of natural hydrology by reducing impervious cover, increasing on-site infiltration, and managing stormwater runoff.</td>
<td><strong>OPTION 1</strong> – <strong>EXISTING IMPERVIOUSNESS IS LESS THAN OR EQUAL TO 50%</strong> Implement a stormwater management plan that prevents the post-development peak discharge rate and quantity from exceeding the pre-development peak discharge rate and quantity for the one- and two-year, 24-hour design storms.</td>
<td>Design Teams should list this credit as being pursued on the Schematic Submission Green Schools Rating System Project Checklist only if the SCA has provided direction to that effect.</td>
</tr>
<tr>
<td>This credit is optional and may only be pursued with SCA direction/permission.</td>
<td>OR</td>
<td>Potential Non-Roof Measures:</td>
</tr>
<tr>
<td>Porous Asphalt Construction Sequence</td>
<td><strong>OPTION 2</strong>: <strong>EXISTING IMPERVIOUSNESS IS GREATER THAN 50%</strong> Implement a stormwater management plan that results in a 25% decrease in the volume of stormwater runoff from the two-year, 24-hour design storm.</td>
<td>1. Specify vegetated surfaces to minimize impervious surfaces and maintain natural stormwater flows.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Use porous asphalt playards. SCA specification 02516 Exposed Porous Asphalt Paving and Aggregate Base applies to this use.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>NY State DEC is currently developing Best Practice Standards for porous asphalt paving. NYC DEP acceptance of infiltration will have to be acquired.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Design parameters for asphalt paving include the following:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Impervious area to infiltration area ratio should be 5:1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Suitable permeable soil conditions are required for infiltration</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Maintain bottom of stone base of drainage layer 3 ft above high water table and 2 ft above bedrock</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Not recommended for slopes &gt; 6%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Potential Roof Measures:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1. Stormwater from roofs may be channeled into appropriately sized stone infiltration bed under porous asphalt used for non-roof conditions, if and when NYC DEP allows this practice.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Green roofs can reduce the stormwater runoff substantially. NYC DEP acceptance of the</td>
</tr>
</tbody>
</table>
contribution of green roofs must be acquired if the green roof(s) are to be part of the calculations.

Green roofs can reduce stormwater runoff of the roof by 25%, by using either 5” depth extensive green roof over 50% of the roof or 4” modular planter system over 75% of the roof.

Green roofs can also be installed over an egg crate drainage layer to comply with DEP stormwater detention regulations (stormwater detention systems sized for 10-year / 24-hour storm events with a maximum allowable water level on the roof of 3 inches).

If this credit is achieved with a green roof, projects may also pursue credits: S3.1 Site Development Protect or Restore Habitat S3.2 Maximize Open Space S4.1 Stormwater Quality A2.1 Heat Island Effect Roof A6.1 Building as Educational Tool

3. Stormwater drainage structures: Sites greater than an acre with separate storm sewer systems and located in a TMDL watershed or discharging to an impaired 303(d) listed water source must develop a Stormwater Pollution Prevention Plan (SWPPP) that includes water quantities and quality control measures.

Following the NYS Stormwater Management Design Manual, determine the water quantity storage volume (volume of rain water to be detained and treated on site). Confirm calculated volume of stormwater system to meet SPDES requirement is greater than or equal to LEED requirement.

DESIGN DEVELOPMENT
ARCHITECT’S RESPONSIBILITY
• For projects where the SCA has agreed that this credit may be pursued, indicate specific conditions that make this credit achievable. Summarize what systems are proposed to achieve compliance.

60% CONSTRUCTION DOCUMENTS
CIVIL ENGINEER’S RESPONSIBILITY
• Submit calculations confirming that stormwater reductions to achieve this credit have been met. Include:
  • the pre-development site run-off rate (cfs).
  • the pre-development site run-off quantity (cf).
  • the post-development site run-off rate (cfs).
  • the post-development site run-off quantity (cf).

(see LEED-NC 2.2 Reference Guide Credit SS6.1 for reference on calculations)

100% CONSTRUCTION DOCUMENTS
CIVIL ENGINEER’S RESPONSIBILITY
• Submit Certification Form with completed information for this credit.
• Submit updated documentation as necessary.

CONSTRUCTION
No credit submittal.

REFERENCES
LEED-NC 2.2 Credit SS 6.1 Stormwater Design Quantity Control

SCA DESIGN REQUIREMENTS
2.1.1 Asphalt and Concrete Pavements 4.4.1.1 Roof Types 6.1.11 Stormwater Management

SCA STANDARD SPECIFICATIONS
02516 Exposed Porous Asphalt Paving and Aggregate Base 02723 Storm Drainage System 07561 Fluid Applied Protected Membrane Roofing (Planted Roof)

SCA STANDARD DETAILS
None

OTHER REFERENCES


Green roof information: http://www.hrt.msu.edu/greenroof
A3.1, A3.2, A3.3 & A3.4

OPTIMIZE ENERGY PERFORMANCE

<table>
<thead>
<tr>
<th>INTENT</th>
<th>REQUIREMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Achieve energy cost reduction levels above the required minimum standard in credit E3.1R to reduce environmental impacts associated with excessive energy use.</td>
<td>Credit</td>
</tr>
<tr>
<td>A 3.2</td>
<td>10.5%</td>
</tr>
<tr>
<td>A 3.3</td>
<td>14%</td>
</tr>
<tr>
<td>A 3.4</td>
<td>17.5%</td>
</tr>
<tr>
<td>A 3.5</td>
<td>21%</td>
</tr>
</tbody>
</table>

1. This credit should only be pursued when project specific energy modeling is required because: the SCA prototypical energy cost modeling does not apply; it is required for the project to meet NY State Energy Code; or the SCA has directed that school specific modeling be conducted.

The SCA may direct project specific modeling be conducted because either the SCA prototypical energy systems do not apply to a specific site, or the SCA has determined that there are opportunities for non-standard energy systems at particular sites such as geothermal systems at a site with an underlying aquifer available for heat transfer.

2. Points for these credits are based on project specific energy cost reduction modeling per ASHRAE 90.1-2004, Schedule G. These credits cannot be achieved with prototypical modeling.

3. To demonstrate energy cost reduction as required by this credit, conduct a whole building energy simulation per ASHRAE/IESNA standard 90.1-2004 (without amendments) using the building performance rating method in Appendix G.

4. Projects pursuing this credit must also demonstrate energy cost reduction by conducting a whole building energy simulation per ASHRAE 90.1-1999 as referenced in LEED-NC Version 2.1, to confirm compliance with Local Law 86/05 energy cost reduction requirements.

5. A payback analysis must be completed per LL86/05 to determine if proposed systems that achieve 25% or 30% energy cost savings have a less than seven year payback – in which case they must be pursued.
**DESIGN DEVELOPMENT**

**MEP ENGINEER’S RESPONSIBILITY**
- For projects where the SCA has agreed that this credit may be pursued, indicate specific conditions that make this credit achievable. Summarize what systems are proposed to achieve compliance.

**60% CONSTRUCTION DOCUMENTS**

**MEP ENGINEER’S RESPONSIBILITY**
- Submit LL86/05 Reporting Form with energy system related information.
- Provide preliminary energy reduction calculation results.
- Incorporate requirements in construction documents.
- Submit payback analysis per LL86/05 requirements.
- Submit LL86/05 Reporting Form.

**100% CONSTRUCTION DOCUMENTS**

**MEP ENGINEER’S RESPONSIBILITY**
- Submit Certification Form with completed information for this credit.
- Submit updated documentation as necessary.
- Submit LL86 Reporting Form.

**CONSTRUCTION**
- Submit LL86 Reporting Form.

---

Design Teams should list this credit as being pursued on the Schematic Submission Green Schools Rating System Project Checklist only if the SCA has provided direction to that effect.

Some of the key differences between energy cost reduction modeling using ASHRAE 90.1-1999 and ASHRAE 2004, Schedule G include:

1. In ASHRAE 90.1-1999, proposed energy systems are compared to a corresponding baseline energy system. Under ASHRAE 2004, proposed energy systems are compared to common baseline energy systems: buildings under 150,000 square foot are compared to air cooled HVAC systems and buildings over 150,000 square foot are compared to water cooled HVAC systems. Thus ASHRAE 90.1-2004 facilitates comparisons between different energy systems.

2. The baseline energy system in ASHRAE 90.1-2004 have smaller window areas than the baseline energy systems in ASHRAE 90.1-1999.

3. ASHRAE 90.1-2004 includes non-regulated energy loads (including plug loads, exterior lighting and elevators).
### INTENT

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.

This credit is optional and may only be pursued with SCA direction/permission.

### REQUIREMENTS

Use on-site renewable energy systems to offset building energy cost by a minimum of 2.5%. Calculate project performance by expressing the energy produced by the renewable systems as a percentage of the building annual energy use using the references below.

Use the building annual energy cost calculated in E 3.1R or use the Department of Energy (DOE) Commercial Buildings Energy Consumption Survey (CBECS) database to determine the estimated electricity use. (Table of use for different building types is provided in the LEED-NC Reference Guide.)

### BEST PRACTICES AND IMPLEMENTATION

Design Teams should list this credit as being pursued on the Schematic Submission Green Schools Rating System Project Checklist only if the SCA has provided direction to that effect.

Currently, the cost of renewable energy is high. With the advent of future technology, renewable energy costs may decrease to the point they are economically viable for schools.

Assess the project for non-polluting and renewable energy potential including solar, wind and geothermal strategies. When applying these strategies, take advantage of net metering with the local utility.

---

Photovoltaic (PU) Solar Panels at Bronx High School of Science
**DESIGN DEVELOPMENT**

**MEP ENGINEER’S RESPONSIBILITY**
- For projects where the SCA has agreed that this credit may be pursued, indicate specific conditions that make this credit achievable. Summarize what systems are proposed to achieve compliance.

**60% CONSTRUCTION DOCUMENTS**
No credit submittal.

**100% CONSTRUCTION DOCUMENTS**

**MEP ENGINEER’S RESPONSIBILITY**
- Submit description of the On-Site Renewable Energy Source(s) used, the annual energy generated from each source and the backup fuel for each source (i.e., the fuel that is used when the renewable energy source is unavailable). Include the source of the annual energy cost information (energy model or industry database) and provide the appropriate energy values and costs.
- Submit Certification Form with completed information for this credit.
- Submit updated documentation as necessary.

**CONSTRUCTION**
No credit submittal.

**REFERENCES**

**LEED-NC 2.2 Credit EA 2**
On-Site Renewable Energy

**SCA DESIGN REQUIREMENTS**
None

**SCA STANDARD SPECIFICATIONS**
None

**SCA STANDARD DETAILS**
None

**OTHER REFERENCES**
American Wind Energy Association:
www.awea.com

Net Metering:
www.eere.energy.gov/greenpower/netmetering

National Renewable Energy Laboratory:
www.nrel.gov

Database of State Incentives for Renewable Energy:
www.dsireusa.org

Solar Hot Water Collectors at Bronx High School of Science
<table>
<thead>
<tr>
<th>INTENT</th>
<th>REQUIREMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increase demand for building materials and products that:</td>
<td>This credit may be pursued with SCA direction where there is specific additional funding for compliance with this credit, or where calculations have demonstrated to SCA that credit can be achieved in a cost-effective manner, using one of the following:</td>
</tr>
<tr>
<td>Incorporate recycled content, reducing impacts resulting from the extraction and processing of virgin materials</td>
<td>Recycled Content – Comply with SCA Green Schools Rating System Credit M2.1 requirements but research and specify additional recycled materials such that the overall combined recycled content of construction materials is at least 20%.</td>
</tr>
<tr>
<td>OR</td>
<td>OR</td>
</tr>
<tr>
<td>Are extracted and manufactured within the region, thereby supporting the use of indigenous resources and reducing the environmental impacts resulting from transportation</td>
<td>Regionally Extracted Materials – Comply with SCA Green Schools Rating System Credit M2.2 requirements but research and specify additional regionally extracted materials such that the overall combined regionally extracted content of construction materials is at least 20%.</td>
</tr>
</tbody>
</table>

Note that project specifications may not mandate regional content for materials, they may only require submittal of regional content documentation.
Design Teams should list this credit as being pursued on the Schematic Submission Green Schools Rating System Project Checklist only if the SCA has provided direction to that effect.

The SCA standards do not incorporate materials and products that would achieve this credit. If the SCA approves pursuit of this credit, Design Teams must research and specify complying materials that typically meet the requirements.

Design Teams should refer to the LEED-NC 2.2 Reference Guide for additional detail on approach and implementation.

**DESIGN DEVELOPMENT**

**ARCHITECT’S RESPONSIBILITY**
- For projects where the SCA has agreed that this credit may be pursued, indicate specific conditions that make this credit achievable. Summarize what materials are proposed to be used to achieve compliance.

**60% CONSTRUCTION DOCUMENTS**

**ARCHITECT’S RESPONSIBILITY**
- Incorporate credit requirements in construction documents.
- Submit calculations based on project estimate demonstrating that established levels of sustainable material are likely to be achieved.
- Submit analysis of cost of compliance for this credit.

**100% CONSTRUCTION DOCUMENTS**

**ARCHITECT’S RESPONSIBILITY**
- Submit Certification Form with completed information for this credit.
- Submit updated documentation as necessary.

**CONSTRUCTION**

**CONTRACTOR’S RESPONSIBILITY**
- Complete Contractors recycled and regional materials reporting forms for products with minimum recycled content specified.
- Submit final costs for divisions 2-10.

**ARCHITECT’S RESPONSIBILITY**
- Review submittals for compliance.
- Using Contractor’s Sustainable Materials Form and final costs for divisions 2-10. Confirm that the established percentages of sustainable materials are achieved.

**REFERENCES**

LEED-NC 2.2 Credit MR 4.2- Recycled Content 20% (Post-Consumer + ½ Pre-Consumer)
LEED-NC 2.2 Credit MR 5.2 - Regional Materials: 20% Extracted, Processed and Manufactured Regionally

**SCA DESIGN REQUIREMENTS**
None

**SCA STANDARD SPECIFICATIONS**
Existing SCA Standard Specifications would need to be revised by the Design Team to achieve this credit.

**SCA STANDARD DETAILS**
None

**OTHER REFERENCES**
None
### A5.1 DAYLIGHT IN CLASSROOMS

<table>
<thead>
<tr>
<th>INTENT</th>
<th>REQUIREMENTS</th>
<th>BEST PRACTICES AND IMPLEMENTATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Provide uniform light with minimal glare. Make ample use of natural daylight. Evaluate lighting quality during the design process through computer modeling. This credit is optional and may only be pursued with SCA direction/permission.</td>
<td>Conduct daylight modeling to demonstrate that 75% of the classrooms in the school meet the daylight autonomy criteria established below. Daylight Autonomy (DA) is the percentage of time over a year when daylight can provide a given illuminance at a given point. Daylight Autonomy calculations should use the continuous method, meaning if the target is 50 footcandles, and there are 30 footcandles from the sun, the result is 60% DA for that time step. MaxDA &lt; 1% for 5% of the classroom AND DA 40-60% for 60% of the classroom For this credit, classrooms include: general classrooms, art rooms, music rooms, science rooms, computer rooms and special needs, remedial and multi-purpose classrooms. One simplified daylight modeling program that may be used is the Sensor Placement Optimization Tool (SPOT) program which was originally designed to support use of daylighting in classrooms. The program has a design tool and an analysis tool - use of the analysis tool is what is referred to in this credit. This program is publicly available on the Internet.</td>
<td>Design Teams should list this credit as being pursued on the Schematic Submission Green Schools Rating System Project Checklist only if the SCA has provided direction to that effect. To design good daylighting in classrooms, the following four issues should be considered: 1. Optimize Interior material reflectance values - For optimal daylighting quality in classrooms, the US Department of Energy recommends the following material reflectance values: ceilings &gt; 80%, walls 50%-70%, floors 20%-40%, and furnishings 25%-45%. The most important interior light-reflecting surface is the ceiling. Tilting the ceiling plane toward the daylight source also increases the daylight that is reflected from this surface. The SCA sets the maximum light reflectance for classroom VCT flooring at 45%. 2. Effective aperture, as defined by the equation below should be set to 0.30: [ \text{EA} = \text{VT} \times \text{WWR} ] ( \text{EA} ) - Effective Aperture ( \text{VT} ) - Visible Transmittance ( \text{WWR} ) - Window-to-Wall Ratio 3. Window/skylight placement - Positioning windows high in the walls allows light to penetrate deep into rooms. Continuous strip windows allow for uniform dispersion of light. Windows with a sill height below 3’6” at the corners of the classroom can provide views as well as lighting at the ...</td>
</tr>
</tbody>
</table>
4. Glare control/shading devices - The SCA typical system for control glare is manual shades. The following glazing and shading systems that reduce glare and operate without manual user adjustment may be proposed for SCA approval: solatube skylights, translucent glass, light shelves and fixed exterior shading devices.

**DESIGN DEVELOPMENT**

**ARCHITECT’S RESPONSIBILITY**
- For projects where the SCA has agreed that this credit may be pursued, indicate specific conditions that make this credit achievable. Include a summary of the design measures to be used to achieve compliance.

**60% CONSTRUCTION DOCUMENTS**

**ARCHITECT’S RESPONSIBILITY**
- Submit daylight modeling or SPOT data regarding classrooms demonstrating compliance with credit criteria. Input visible light transmittance for the selected glazing in the light model.

**100% CONSTRUCTION DOCUMENTS**

**ARCHITECT’S RESPONSIBILITY**
- Submit Certification Form with completed information for this credit.
- Submit updated documentation as necessary.

**CONSTRUCTION**

No credit submittal.

Typical SPOT Daylighting Analysis Report

**REFERENCES**

NY CHPS Credit 5.1.3 Daylighting in Classrooms

MA CHPS Credit 1.1 Daylighting in Classrooms

SCA DESIGN REQUIREMENTS
None

SCA STANDARD SPECIFICATIONS
None

SCA STANDARD DETAILS
None

OTHER REFERENCES

SPOT software may be downloaded at: [http://www.archenergy.com/SPOT/index.html](http://www.archenergy.com/SPOT/index.html)


US Department of Energy
http://www.eere.energy.gov/buildings/info/design/integratedbuilding/
### INTENT

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

This credit is optional and may only be pursued with SCA direction/permission.

### REQUIREMENTS

Use furniture systems and seating that are low VOC, either Greenguard certified or registered, or whose emissions meet, or are lower than, the best practice air emissions standards as established by the US EPA’s Environmental Technology Verification (ETV) test method in a qualified testing laboratory.

Emission Limits for furniture systems:
- Total VOC < .5 mg/m³, Formaldehyde < .05 ppm,
- Total Aldehydes < .01 ppm, 4-PC as an odorant below the limits of detection.

For seating:
- Total VOC < .25 mg/m³, formaldehyde < .025 ppm.

Furniture systems as referred to in this credit refers to work station systems.

### BEST PRACTICES AND IMPLEMENTATION

Design Teams should list this credit as being pursued on the Schematic Submission Green Schools Rating System Project Checklist only if the SCA has provided direction to that effect.

The Design Team should coordinate with SCA/F&E Unit during the DD and 60% construction document phases so that research on complying furniture items can begin as necessary.

While this credit only requires furniture systems and seating to meet VOC/Greenguard requirements, the SCA may choose to review additional items for this requirement.

One compliance option is to consider pre-conditioning furniture products offsite.
## Design Development

**SCA / F&E Unit Responsibility**
- For projects where the SCA has agreed that this credit may be pursued, indicate specific conditions that make this credit achievable. Summarize how credit will be achieved.
- Submit package of drawings and program for SCA/F&E Unit’s use in preliminary research as required into furniture and equipment contracts.

### 60% Construction Documents

**SCA / F&E Unit Responsibility**
- Following submission by Design Team of 60% construction documents SCA/F&E Unit, should submit a draft list of furniture items indicating which will comply with this credit to the SCA Design Manager so Design Team may make any necessary modifications to construction documents.

### 100% Construction Documents

No credit submittal.

## CONSTRUCTION

**SCA F&E Unit Responsibility**
- Submit a list of F&E items indicating which items meet the VOC requirements of this credit.

### Architect’s Responsibility

- Submit Certification Form with completed information for this credit.

## References

- WA-CHPS Credit Q 3.2
  - Low-Emitting Materials, Furniture

- SCA Design Requirements
  - None

- SCA Standard Specifications
  - None

- SCA Standard Details
  - None

- Other References
  - Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers by the California Department of Health Services.
### A6.1 BUILDING AS EDUCATIONAL TOOL

<table>
<thead>
<tr>
<th>INTENT</th>
<th>REQUIREMENTS</th>
<th>BEST PRACTICES AND IMPLEMENTATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Introduce students to the environmental design features of the building.</td>
<td>Develop architectural elements or curriculum to engage students with the environmental design features of the building.</td>
<td>Design Teams should list this credit as being pursued on the Schematic Submission Green Schools Rating System Project Checklist only if the SCA has provided direction to that effect.</td>
</tr>
<tr>
<td>This credit is optional and may only be pursued with SCA direction/permission.</td>
<td>Using the building as an educational tool may include a combination of architectural and programmatic elements. Architectural elements might include special signage, display boxes, view panels of building elements. Programmatic elements might include a monograph appropriate for students or provision of background information and training for teachers.</td>
<td>As coordinated with the school administration, students may participate in projects that educate each other and visitors about the environmental design features.</td>
</tr>
<tr>
<td></td>
<td>As coordinated with the school administration, students may participate in projects that educate each other and visitors about the environmental design features.</td>
<td>Design Teams pursuing this credit may review the USGBC credit interpretation ruling on education programs for LEED-NC projects.</td>
</tr>
</tbody>
</table>
**CREDIT SUBMITTALS**

**DESIGN DEVELOPMENT**

**ARCHITECTS RESPONSIBILITY**
- For projects where the SCA has agreed that this credit may be pursued, indicate specific conditions that make this credit achievable. Include a summary of the design approach and a description of the sustainable design measures to be used to support educational curriculum on the environment.

**60% CONSTRUCTION DOCUMENTS**
- Incorporate requirements in construction documents.

**100% CONSTRUCTION DOCUMENTS**
- No credit submittal.

**CONSTRUCTION**

**ARCHITECTS RESPONSIBILITY**
- Submit Certification Form with completed information for this credit.
- Submit updated documentation as necessary.
- Submit sustainable curriculum to be implemented for the project.

**REFERENCES**

- LEED-NC 2.2 ID 1.4 Educational Program
- WA CHPS Extra Credit 2.1 Environmental Education
- USGBC Credit Interpretation Ruling on Educational Program usgbc.org
<table>
<thead>
<tr>
<th>FORMS FOR DESIGN TEAM</th>
<th>REFERENCES FORMS</th>
</tr>
</thead>
<tbody>
<tr>
<td>(ALL FORMS DOWNLOADABLE FROM SCA WEB SITE)</td>
<td>(ALL FORMS DOWNLOADABLE FROM SCA WEB SITE)</td>
</tr>
<tr>
<td>Project Checklist</td>
<td>M1.5R and M1.6: Construction Waste Management Form</td>
</tr>
<tr>
<td>Credit Compliance Narrative (first page only as sample)</td>
<td>M2.1R and M2.2R: Contractors Sustainable Materials Form</td>
</tr>
<tr>
<td>S1.4: Development Density &amp; Community Connectivity Form</td>
<td>M2.1R and M2.2R: Contractors Sustainable Materials - Tracking Form</td>
</tr>
<tr>
<td>S5.1R Light Pollution Reduction Form A - Site Lumen Calculation Form</td>
<td>Commissioning Certification Form</td>
</tr>
<tr>
<td>S5.1R Light Pollution Reduction Form B - Lighting Power Density (LPD)</td>
<td>Contractor Certification Form</td>
</tr>
<tr>
<td>W2.1R, W2.2R and W2.3R: Water Use Reduction Form</td>
<td>LL86/05 Reporting Form</td>
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<tr>
<td>E1.2R: Refrigerant Impact Form</td>
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<tr>
<td>M1.2, M1.3 and M1.4: Building Reuse Form</td>
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<tr>
<td>M2.1R: Recycled Content - Summary Form</td>
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<tr>
<td>M2.2R: Regional Content - Summary Form</td>
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<td>Q3.1R: Low Emitting Materials - Summary Form A - Adhesives and Sealants</td>
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<tr>
<td>Q3.2R, Q 3.3R and Q3.4R: Low Emitting Materials Summary Form B - Paints, Coatings, Carpets, Composite Wood and Agrifiber Products</td>
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<tr>
<td>Q7.1: Daylight Calculation Form</td>
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<tr>
<td>Q7.2: Views Calculation Form</td>
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<td>Design Team Certification - Design Phase</td>
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<tr>
<td>Design Team Certification - Construction Phase</td>
<td></td>
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</tbody>
</table>
### Project Checklist - page 1 of 2

**NYC School Construction Authority**  
**NYC Green Schools Rating System**

#### Project Information
- **Project:**
- **Address:**
- **LLW #:**
- **Design #:**
- **Reviewer:**
- **Architect:**
- **Reviewer Sign Off:**

#### Submission Information
- **Submission (Check one):**
- **Date:**

#### LEED Reference

<table>
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<tr>
<th>Site</th>
<th>Required For all Projects</th>
<th>Required if Feasible*</th>
<th>Optional Credits**</th>
<th>Required/Feasible For This Project(Enter 1 or 0)</th>
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<tbody>
<tr>
<td>Site Selection S 1.1R</td>
<td>Construction Activity Pollution Prevention</td>
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<tr>
<td>SS 1</td>
<td>Site Selection</td>
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<td>SS 2</td>
<td>Sustainable Site &amp; Building Layout</td>
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<td>SS 3</td>
<td>Development Density &amp; Community Connectivity</td>
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<td>SS 4</td>
<td>Joint Use of Facilities, Community Access</td>
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<td>SS 5</td>
<td>Brownfield Redevelopment</td>
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<td>Site Selection</td>
<td>Alternative Transportation, Public Transportation Access</td>
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<tr>
<td>SS 5</td>
<td>Site Development, Protect or Restore Habitat</td>
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<td>Minimize Impact on Site SS 5.1</td>
<td>Site Development, Maximize Open Space</td>
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<td>Stormwater Design SS 5.1</td>
<td>Stormwater Design, Quality Control</td>
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<td>Outdoor Lighting SS 5.1</td>
<td>Light Pollution Reduction</td>
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#### Water Information

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<th>Optional Credits**</th>
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<tbody>
<tr>
<td>Outdoor Systems WE 1.1</td>
<td>Water Efficient Landscaping, Reduce by 50%</td>
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<tr>
<td>WE 1.2</td>
<td>Water Efficient Landscaping, No Potable Use or No Irrigation</td>
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<tr>
<td>Indoor Systems WE 3.1</td>
<td>Water Use Reduction, 20% Reduction</td>
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<td>WE 3.2</td>
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#### Energy Information

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<td>EA Pr 3/EA 4</td>
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<td>Verification EA 5</td>
<td>Measurement &amp; Verification</td>
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<td>3.3.5</td>
<td>Energy Management System Controls, HVAC and Hot Water</td>
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<td>Energy Efficiency EA Pr 2</td>
<td>Minimum Energy Performance</td>
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<td>HVAC Optimization</td>
<td>HVAC System Sizing, Avoid Oversizing</td>
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#### Materials Information

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<td>Efficient Material Use MR Pr 1</td>
<td>Storage &amp; Collection of Recyclables</td>
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<td>Building Reuse, Maintain 75% of Existing Walls, Floors &amp; Roof</td>
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<td>MR 1.2</td>
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**Totals:** 4 4 #VALUE! #VALUE! #VALUE!

---

3/15/2007
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 #: ____________________________________  Reviewer: _________________________
Design #: ____________________________________  Reviewer Sign Off: ______________________
Architect: ____________________________________

Indoor Environmental Quality

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<th>LEED Reference</th>
<th>CHPS Reference</th>
<th>NYC GSG Reference</th>
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Totals: 12 6

Additional Credits

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<th>NYC GSG Credit</th>
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<th>Optional Credits</th>
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Totals: 1 0 11

Summary Total: 28 17 11

NYC Green Schools Rating System

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<th>Credits Required for all Projects</th>
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3/15/2007
Credit Compliance Narratives

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<tr>
<td>Address:</td>
<td>Architect:</td>
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<tr>
<td>LLW #:</td>
<td>Submission:</td>
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<tr>
<td>Design #:</td>
<td>Reviewer:</td>
</tr>
<tr>
<td>Reviewer Sign Off:</td>
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</tbody>
</table>

Directions:

- Eight of the Site narratives are submitted with the Schematic Submission as indicated below. All other required narratives are submitted with the Design Development submittal.

- Design Teams must submit narratives for all credits in the Site, Water, Energy, Materials and Indoor Environmental Quality sections. For the Additional Credits, all projects must include a narrative for credit A1.1R. Narratives for the other Additional Credits should only be provided when it has been determined with the SCA that the additional credit(s) are to be pursued for this project. Include explanation of why the additional credit is to be pursued on this project.

- Narratives should summarize the design approach to credit compliance and identify SCA standards to be incorporated into the design documents. Include any specific information requested under the “Credit Submittals” heading from the second page of credit text. Provide explanations for credits that are determined to be “not feasible” for this project.

### Site Credits

#### Site Selection

<p>| | |</p>
<table>
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<tr>
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<tr>
<td>S 1.1R</td>
<td>Construction Activity Pollution Prevention</td>
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<td>S 1.2R</td>
<td>Site Selection NARRATIVE AT SCHEMATIC SUBM.</td>
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<tr>
<td>S 1.3</td>
<td>Sustainable Site &amp; Building Layout NARRATIVE AT SCHEMATIC SUBM.</td>
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<td>S 1.4</td>
<td>Development Density &amp; Community Connectivity NARRATIVE AT SCHEMATIC SUBM.</td>
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<td>S 1.5R</td>
<td>Joint Use of Facilities, Community Access</td>
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<td>S 1.6</td>
<td>Brownfield Redevelopment NARRATIVE AT SCHEMATIC SUBM.</td>
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### Option 1 - Community Connectivity (Submit site plan with basic service locations noted)

<table>
<thead>
<tr>
<th>Plan Key Identification</th>
<th>Business Name within 1/2 mile (2,640 feet) radius and accessible by pedestrian access</th>
<th>Service Type</th>
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<tr>
<td>10</td>
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</tbody>
</table>

### Option 2 - Development Density

Density radius within which lots must be included = \(3 \times \sqrt{\text{site area in sf}}\) =

<table>
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<tr>
<th>Sequential Number Assigned to Lot</th>
<th>Block No.</th>
<th>Lot No.</th>
<th>Lot Area in SF</th>
<th>Lot Area in Acres</th>
<th>Gross Building Square Footage per lot*</th>
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<tbody>
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<td>10,000</td>
<td>0.23</td>
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<td>12</td>
<td>10,000</td>
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</table>

[insert rows as necessary]

Combined Total Lot Area in SF: 70,000
Combined Total Lot Area in Acres: 1.61
Combined Total Building Gross Area in SF: 105,000

Development Density = SF/Acre of Gross Building Square Footage = 65,340

*Lot Area and Building Gross Area information may be obtained through oasisnyc.net. This site is a project of the New York City Open Accessible Space Information System Cooperative (OASIS).

Note: Include project site in development density calculations

If number above is greater than or equal to 60,000 sf/acre, then project complies using this criteria.

3/15/2007
### Site Lumen Calculation

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<th>Fixture Type</th>
<th>Quantity of Installed Luminaries</th>
<th>Initial Lamp Lumens per Luminaire</th>
<th>Total Lamp Lumens</th>
<th>Initial Lamp Lumens Above 90 degrees from Nadir</th>
<th>Total Lamp Lumens Above 90 degrees</th>
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<tr>
<td>lt-1a</td>
<td>4</td>
<td>5,000</td>
<td>20,000</td>
<td>50</td>
<td>200</td>
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<td>lt-1c</td>
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<td>70,000</td>
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</table>

Total Lamp Lumens: 105,000

Total Lamp Lumens above 90 degrees: 850

Percentage of Site Lamp Lumens above 90 degrees: 1%

If Percentage of Site Lamp Lumens above 90 degrees is less than or equal to the value referenced for the select site LZ then site complies.

LZ1: 0%, LZ2: 2%, LZ3: 5%, LZ4: 10%

3/15/2007
Light Pollution Reduction - Form B  
NYC School Construction Authority  
NYC Green Schools Rating System  
Credit S5.1R  

<table>
<thead>
<tr>
<th>Site Location</th>
<th>Fixture Type</th>
<th>Fixture Wattage</th>
<th>Fixture Quantity</th>
<th>Total Fixture Power (Watts)</th>
<th>Area Illuminated (SF)</th>
<th>Actual LPD (per design)</th>
<th>ASHRAE Allowable LPD (Watts/SF)</th>
<th>SCA Allowable LPD 20% below ASHRAE</th>
<th>Site Lighting Complies</th>
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Total Actual Designed LPD: 0.28

SCA Allowable LPD (adds 5% unrestricted allowable per ASHRAE 90.1-2004 Table 9.4.5): 0.32

Is Actual Designed LPD less than or equal to SCA allowable LPD? Project Complies: yes or no

2. Building Façade and Landscape Feature Lighting

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Total Actual Designed LPD: 0.15

SCA Allowable LPD (adds 5% unrestricted allowable per ASHRAE 90.1-2004 Table 9.4.5): 0.2

Is Actual Designed LPD less than or equal to SCA allowable LPD? Project Complies: yes or no

Note: The Allowable ASHRAE 90.1-2004 Lighting Power Densities can be found in ASHRAE and in the LEED-NC 2.2 Reference Guide.
# School in Full Operation

## Fill In Un-Shaded Boxes

### BASE CASE

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</table>

### DESIGN CASE

<table>
<thead>
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<tbody>
<tr>
<td>Conventional Water Closet male</td>
<td>1.00</td>
<td>1.6</td>
<td>1.0</td>
<td>0</td>
<td>0.00</td>
</tr>
<tr>
<td>Dual Flushometer Water Closet female</td>
<td>1.00</td>
<td>1.6</td>
<td>1.0</td>
<td>0</td>
<td>0.00</td>
</tr>
<tr>
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<td>2.00</td>
<td>1.1</td>
<td>1.0</td>
<td>0</td>
<td>0.00</td>
</tr>
<tr>
<td>High Efficiency Urinal male</td>
<td>2.00</td>
<td>0.5</td>
<td>1.0</td>
<td>0</td>
<td>0.00</td>
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<tr>
<td>Aerated Lavatory w/Automatic Shut-Off Control</td>
<td>3.00</td>
<td>0.5</td>
<td>12.0</td>
<td>0</td>
<td>0.00</td>
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<tr>
<td>Low Flow Shower</td>
<td>0.10</td>
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<td>0.00</td>
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<tr>
<td>Food Service Area Sink</td>
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<td>2.5</td>
<td>15.0</td>
<td>0</td>
<td>0.00</td>
</tr>
</tbody>
</table>

### Notes:

1. Figures in shaded boxes are based on EPA 1992 per LEED (base case), SCA standards (design case) or are calculated by this spreadsheet. No design team revision required.
2. Figure entered by Design Team for occupant users for "conventional lavatory" should include all combined total of all students and staff. (From this figure spreadsheet will calculate occupant users for water closets and urinals for design and base case using 50/50 assumption).
3. Staff includes all adult "full time equivalent" adult occupants of the building - such as teachers, administrators, custodial and food services staff. Full Time Equivalent refers to the fact that if there are four half time staff, they would be counted as two full time equivalent occupants in these calculations. For further detail design teams may review LEED-NC 2.2 Reference Guide for Credit WE 3.1-3.3.
4. Figure entered by Design Team for occupant users for showers - should include all high school students and also any physical education staff that would regularly take showers at the school.
5. Figure entered by Design Team for occupant users for "food service sinks" should include total Full Time Equivalent Food Service Staff.
6. For "Summer Operation" occupant users include anticipated average combined total of students and full time equivalent staff.
7. For "Annual Days of Summer Operation" include anticipated number of days for regular summer operation, excluding weekends and days when school is closed.
8. Modernization projects should include the actual fixture flow rate of fixtures to remain in the design case calculations and indicate assumptions about percentage of occupant users who will use those existing fixtures to remain.

---

3/15/2007
### Summer Operation

**BASE CASE**

<table>
<thead>
<tr>
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<td>male</td>
<td>1.00</td>
<td>1.6</td>
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<tr>
<td></td>
<td>Conventional Water Closet</td>
<td>female</td>
<td>3.00</td>
<td>1.6</td>
<td>1.0</td>
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**DESIGN CASE**

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<tbody>
<tr>
<td></td>
<td>Conventional Water Closet</td>
<td>male</td>
<td>1.00</td>
<td>1.6</td>
<td>1.0</td>
<td>0.0</td>
</tr>
<tr>
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<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Dual Flushometer Water Closet</td>
<td>female</td>
<td>1.00</td>
<td>1.6</td>
<td>1.0</td>
<td>0.0</td>
</tr>
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<td></td>
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<tr>
<td></td>
<td>Dual Flushometer Water Closet</td>
<td>female</td>
<td>2.00</td>
<td>1.1</td>
<td>1.0</td>
<td>0.0</td>
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<td></td>
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<td></td>
</tr>
<tr>
<td></td>
<td>High Efficiency Urinal</td>
<td>male</td>
<td>2.00</td>
<td>0.5</td>
<td>1.0</td>
<td>0.0</td>
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</tr>
</tbody>
</table>

#### Sewage Generated [Gal]

- Conventional Water Closet: 0.00
- Dual Flushometer Water Closet: 0.00
- Dual Flushometer Water Closet: 0.00
- High Efficiency Urinal: 0.00

**Total Design and Base Case "Summer Operation" Uses by All Occupants**

**Total Design Case "Summer Operation" Daily Volume [Gal]**

**Annual Days Summer Operation**

**Total Design Case "Summer Operation" Volume**

**Total Water Use Reduction**

3/15/2007
The matrix below is to assist in calculating the refrigerant impact using the following calculation:

\[ \Sigma (\text{LCGWP} + \text{LCODP} \times 100,000) \times \text{Qunit} / \text{Qtotal} \text{ is less than or equal to 100} \]

Weighted average for multiple pieces of HVAC&R equipment

<table>
<thead>
<tr>
<th>Description</th>
<th>No. of Units</th>
<th>Refrigerant</th>
<th>GWP</th>
<th>ODPr</th>
<th>Rc</th>
<th>Life (yrs)</th>
<th>Lr (%)</th>
<th>Mr (%)</th>
<th>Q total</th>
<th>Tr</th>
<th>LCGWP</th>
<th>LCODP</th>
<th>LCGWP + LCODP</th>
<th>LCGWP + LCODP (100,000) x Qtotal</th>
</tr>
</thead>
<tbody>
<tr>
<td>12</td>
<td>5</td>
<td>R410a</td>
<td>1,890</td>
<td>0</td>
<td>1.8</td>
<td>15</td>
<td>2.0</td>
<td>#</td>
<td>60</td>
<td>40</td>
<td>90.7</td>
<td>90.7</td>
<td>0</td>
<td>90.7</td>
</tr>
<tr>
<td>12</td>
<td>1</td>
<td>R410a</td>
<td>1,890</td>
<td>0</td>
<td>1.8</td>
<td>15</td>
<td>2.0</td>
<td>#</td>
<td>12</td>
<td>40</td>
<td>90.7</td>
<td>90.7</td>
<td>0</td>
<td>90.7</td>
</tr>
<tr>
<td>1</td>
<td>1</td>
<td>R410a</td>
<td>1,890</td>
<td>0</td>
<td>1.8</td>
<td>15</td>
<td>2.0</td>
<td>#</td>
<td>1</td>
<td>40</td>
<td>90.7</td>
<td>90.7</td>
<td>0</td>
<td>90.7</td>
</tr>
<tr>
<td>1</td>
<td>1</td>
<td>R410a</td>
<td>1,890</td>
<td>0.04</td>
<td>3.3</td>
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<td>#</td>
<td>6</td>
<td>40</td>
<td>156.6</td>
<td>35.2</td>
<td>191.6</td>
<td>1151</td>
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<tr>
<td>6</td>
<td>1</td>
<td>R22</td>
<td>1,780</td>
<td>0.04</td>
<td>2.1</td>
<td>10</td>
<td>2.0</td>
<td>#</td>
<td>1</td>
<td>30</td>
<td>112.1</td>
<td>25.2</td>
<td>137.3</td>
<td>137</td>
</tr>
</tbody>
</table>

Subtotal = 8002

Weighted Average Atmospheric Impact \[ \Sigma (\text{LCGWP} + \text{LCODP} \times 100,000) \times \text{Qunit} / \text{Qtotal} \text{ is less than or equal to 100} \]

**Definitions:**
- **LCGWP:** Lifecycle Direct Global Warming Potential (lbCO2/ton-Year) = \[ \text{GWP} \times (\text{Lr} \times \text{Life} + \text{Mr}) \times \text{Rc} / \text{Life} \]
- **LCODP:** Lifecycle Ozone Depletion Potential (lbCFC11/ton-Year) = \[ \text{ODP} \times (\text{Lr} \times \text{Life} + \text{Mr}) \times \text{Rc} / \text{Life} \]
- **GWP:** Global Warming Potential of Refrigerant (0 to 12,000 lbCO2/lb). See on following page.
- **ODP:** Ozone Depletion Potential of Refrigerant (0 to 0.2 lbCFC11/lb). 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.
### Table 1: Credit M1.2 and M1.3 - Building Structure / Envelope Reuse Calculation

<table>
<thead>
<tr>
<th>Structure / Envelope Element</th>
<th>Existing Area (SF)</th>
<th>Existing / Reused Area (SF)</th>
<th>Percentage Reused (%)</th>
<th>Weight of Material in lbs*</th>
<th>Source of Weight Assumption</th>
</tr>
</thead>
<tbody>
<tr>
<td>Foundation / Slab on Grade</td>
<td>0</td>
<td>0</td>
<td>0%</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>2nd Floor Deck</td>
<td>0</td>
<td>0</td>
<td>0%</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>1st Floor Interior Structural Walls</td>
<td>0</td>
<td>0</td>
<td>0%</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>2nd Floor Interior Structural Walls</td>
<td>0</td>
<td>0</td>
<td>0%</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>[insert additional lines as necessary]</td>
<td>0</td>
<td>0</td>
<td>0%</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Roof Deck</td>
<td>0</td>
<td>0</td>
<td>0%</td>
<td>0</td>
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<tr>
<td>North Exterior Wall (excl. windows)</td>
<td>0</td>
<td>0</td>
<td>0%</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>East Exterior Wall (excl. windows)</td>
<td>0</td>
<td>0</td>
<td>0%</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>West Exterior (excl. windows)</td>
<td>0</td>
<td>0</td>
<td>0%</td>
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<td></td>
</tr>
<tr>
<td>South Exterior (excl. windows)</td>
<td>0</td>
<td>0</td>
<td>0%</td>
<td>0</td>
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<tr>
<td>[insert additional lines as necessary]</td>
<td>0</td>
<td>0</td>
<td>0%</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td><strong>TOTALS</strong></td>
<td>0</td>
<td>0</td>
<td>0%</td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>

These columns to be completed only if project does not achieve percentage reuse specified in Credit M1.2 or M1.3

### Table 2: Credit M1.4 - Interior Non-Structural Reuse Calculation

Projects that reuse/divert from landfill 50% or more of interior non-structural elements achieve this credit.

<table>
<thead>
<tr>
<th>Interior Non-Structural Element</th>
<th>Total Area* (SF)</th>
<th>Existing / Reused Area (SF)</th>
<th>Percentage Reused (%)</th>
<th>Weight of Material in lbs*</th>
<th>Source of Weight Assumption</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gypsum Board Wall Partitions - Full Height</td>
<td>0</td>
<td>0</td>
<td>0%</td>
<td>0</td>
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<tr>
<td>Gypsum Board Wall Partitions - Partial Height</td>
<td>0</td>
<td>0</td>
<td>0%</td>
<td>0</td>
<td></td>
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<tr>
<td>Masonry partitions, non-structural</td>
<td>0</td>
<td>0</td>
<td>0%</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Carpeting</td>
<td>0</td>
<td>0</td>
<td>0%</td>
<td>0</td>
<td></td>
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<tr>
<td>Resilient Flooring</td>
<td>0</td>
<td>0</td>
<td>0%</td>
<td>0</td>
<td></td>
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<tr>
<td>Ceramic Tile</td>
<td>0</td>
<td>0</td>
<td>0%</td>
<td>0</td>
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<tr>
<td>Suspended Ceiling systems</td>
<td>0</td>
<td>0</td>
<td>0%</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Gypsum Board Ceilings</td>
<td>0</td>
<td>0</td>
<td>0%</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Interior Doors (Wood)</td>
<td>0</td>
<td>0</td>
<td>0%</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Interior Windows / Sidelights</td>
<td>0</td>
<td>0</td>
<td>0%</td>
<td>0</td>
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<tr>
<td>Interior Doors (Metal)</td>
<td>0</td>
<td>0</td>
<td>0%</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Interior Casework / cabinetry</td>
<td>0</td>
<td>0</td>
<td>0%</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>[insert additional lines as necessary]</td>
<td>0</td>
<td>0</td>
<td>0%</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td><strong>TOTALS</strong></td>
<td>0</td>
<td>0</td>
<td>0%</td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>

These columns only to be completed if project does not achieve percentage reuse specified in Credit M1.4

*Note: The Total Area Calculation includes both existing materials to remain and existing materials to be reused.

**Assumption** - Weight of materials assumptions may be taken from [Architectural Graphic Standards](#) or other established source.

Below are a selection of materials weight assumptions from [Architectural Graphic Standards](#):

- **4" brick:** 40 lbs per square foot
- **6" light weight CMU:** 31 lbs per square foot
- **8" light weight CMU:** 35 lbs per square foot
- **Hardwood Flooring:** 4 lbs per square foot
- **Concrete Floor/Roof:** Light weight 6 lbs per square foot per inch of slab
- **Built-up Roofing:** 6.5 lbs per square foot
- **Metal Deck:** 2.2 lbs per square foot

3/15/07
**Definitions:**

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

** ** **Pre-Consumer Recycled Content:** Recovered industrial and manufacturing materials diverted from municipal solid waste for the purpose of collection and recycling.

**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
**Definitions:**

***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 or re-used (including those salvaged from the site).

**Notes:**
1. Regional content for concrete provide combined cost for all concrete materials, and distance information requested.
2. Regional content for materials with various points of extraction all within the 500-mile radius list single item with the greatest distance.
### Adhesives

<table>
<thead>
<tr>
<th>Product Use</th>
<th>Manufacturer’s Name</th>
<th>Product Name</th>
<th>Product’s VOC Level [g/L less water]</th>
<th>VOC Limit [g/L less water]</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Architectural Applications</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Indoor Carpet Adhesives</td>
<td></td>
<td></td>
<td>50</td>
<td></td>
</tr>
<tr>
<td>Carpet Pad Adhesives</td>
<td></td>
<td></td>
<td>50</td>
<td></td>
</tr>
<tr>
<td>Wood Flooring Adhesives</td>
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<td></td>
<td>100</td>
<td></td>
</tr>
<tr>
<td>Rubber Floor Adhesives</td>
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<td></td>
<td>60</td>
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<tr>
<td>Subfloor Adhesives</td>
<td></td>
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<td>50</td>
<td></td>
</tr>
<tr>
<td>Ceramic Tile Adhesives</td>
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<td>65</td>
<td></td>
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<tr>
<td>VCT &amp; Asphalt Adhesives</td>
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<td>50</td>
<td></td>
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<tr>
<td>Drywall &amp; Panel Adhesives</td>
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<td>50</td>
<td></td>
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<tr>
<td>Cove Base Adhesives</td>
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<td></td>
<td>50</td>
<td></td>
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<tr>
<td>Multipurpose Construction Adhesives</td>
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<td>Structural Glazing Adhesives</td>
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<td>PVC Welding</td>
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<td>CPVC Welding</td>
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<td>490</td>
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<tr>
<td>ABS Welding</td>
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<tr>
<td>Plastic Cement Welding</td>
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<td>Adhesive Primer for Plastic</td>
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<tr>
<td>Sheet Applied Rubber Lining Operation</td>
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<td>850</td>
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<td>Top &amp; Trim Adhesive</td>
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<td></td>
<td>250</td>
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</tbody>
</table>

3/15/2007
## Adhesives

### Architectural Applications

<table>
<thead>
<tr>
<th>Product Use</th>
<th>Manufacturer's Name</th>
<th>Product Name</th>
<th>Product's VOC Level [g/L less water]</th>
<th>VOC Limit [g/L less water]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Metal to Metal</td>
<td></td>
<td></td>
<td>30</td>
<td></td>
</tr>
<tr>
<td>Plastic Foams</td>
<td></td>
<td></td>
<td>50</td>
<td></td>
</tr>
<tr>
<td>Porous Material (except wood)</td>
<td></td>
<td></td>
<td>50</td>
<td></td>
</tr>
<tr>
<td>Wood</td>
<td></td>
<td></td>
<td>30</td>
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</tr>
<tr>
<td>Fiberglass</td>
<td></td>
<td></td>
<td>80</td>
<td></td>
</tr>
</tbody>
</table>

### Substrate Specific Applications

<table>
<thead>
<tr>
<th>Product Use</th>
<th>Manufacturer's Name</th>
<th>Product Name</th>
<th>Product's VOC Level [g/L less water]</th>
<th>VOC Limit [g/L less water]</th>
</tr>
</thead>
<tbody>
<tr>
<td>General purpose mist spray</td>
<td></td>
<td></td>
<td>65% VOCs by wt.</td>
<td></td>
</tr>
<tr>
<td>General purpose web spray</td>
<td></td>
<td></td>
<td>55% VOCs by weight</td>
<td></td>
</tr>
<tr>
<td>Special purpose aerosol adhesives (all types)</td>
<td></td>
<td></td>
<td>70% VOCs by weight</td>
<td></td>
</tr>
</tbody>
</table>

## Sealants

### Product Use

<table>
<thead>
<tr>
<th>Product Use</th>
<th>Manufacturer's Name</th>
<th>Product Name</th>
<th>Product VOC Level [g/L less water]</th>
<th>VOC Limit [g/L less water]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Architectural</td>
<td></td>
<td></td>
<td>250</td>
<td></td>
</tr>
<tr>
<td>Nonmembrane Roof</td>
<td></td>
<td></td>
<td>300</td>
<td></td>
</tr>
<tr>
<td>Roadway</td>
<td></td>
<td></td>
<td>250</td>
<td></td>
</tr>
<tr>
<td>Single-Ply Roof Membrane</td>
<td></td>
<td></td>
<td>450</td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td></td>
<td></td>
<td>420</td>
<td></td>
</tr>
<tr>
<td>Architectural Non Porous</td>
<td></td>
<td></td>
<td>250</td>
<td></td>
</tr>
<tr>
<td>Architectural Porous</td>
<td></td>
<td></td>
<td>775</td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td></td>
<td></td>
<td>750</td>
<td></td>
</tr>
</tbody>
</table>

3/15/2007
### Paints and Coatings

<table>
<thead>
<tr>
<th>Product Use</th>
<th>Manufacturer’s Name</th>
<th>Product Name</th>
<th>Product’s VOC Level [g/L less water]</th>
<th>VOC Limit [g/L less water]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Architectural paints</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Flats</td>
<td></td>
<td></td>
<td></td>
<td>50 g/L</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non-Flats</td>
<td></td>
<td></td>
<td></td>
<td>150 g/L</td>
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<tr>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Anti-corrosive, anti-rust paints</td>
<td></td>
<td></td>
<td></td>
<td>250 g/L</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clear wood finishes</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>varnish</td>
<td></td>
<td></td>
<td></td>
<td>350 g/L</td>
</tr>
<tr>
<td>lacquer</td>
<td></td>
<td></td>
<td></td>
<td>550 g/L</td>
</tr>
<tr>
<td>Floor coatings</td>
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<td></td>
<td></td>
<td>100 g/L</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sealer</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>waterproofing sealers</td>
<td></td>
<td></td>
<td></td>
<td>250 g/L</td>
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<tr>
<td>sanding sealers</td>
<td></td>
<td></td>
<td></td>
<td>275 g/L</td>
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<tr>
<td>all other sealers</td>
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<td></td>
<td></td>
<td>200 g/L</td>
</tr>
<tr>
<td>Stains</td>
<td></td>
<td></td>
<td></td>
<td>250 g/L</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Carpet and Carpet Cushions</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Composite Wood & Agrifiber Products

<table>
<thead>
<tr>
<th>Product Use</th>
<th>Manufacturer’s Name</th>
<th>Product Name</th>
<th>Type of CRI Green Label Plus Documentation Attached</th>
<th>Documentation of Lack of added Urea Formaldehyde</th>
</tr>
</thead>
</table>

3/15/2007
### Daylight Calculation Form

**NYC School Construction Authority**

**NYC Green Schools Rating System**

#### 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

<table>
<thead>
<tr>
<th>Type</th>
<th>Factor</th>
<th>Actual</th>
<th>Min.</th>
<th>Factor</th>
<th>Each</th>
<th>Room</th>
</tr>
</thead>
<tbody>
<tr>
<td># Room Name</td>
<td>1,000</td>
<td>SF 50</td>
<td>SF VIS</td>
<td>0.10</td>
<td>0.62</td>
<td>0.40</td>
</tr>
<tr>
<td># Room Name</td>
<td>1,000</td>
<td>SF 50</td>
<td>SF DAY</td>
<td>0.10</td>
<td>0.62</td>
<td>0.70</td>
</tr>
<tr>
<td># Room Name</td>
<td>1,000</td>
<td>SF 50</td>
<td>SF VIS</td>
<td>0.10</td>
<td>0.62</td>
<td>0.40</td>
</tr>
<tr>
<td># Room Name</td>
<td>1,000</td>
<td>SF 50</td>
<td>SF DAY</td>
<td>0.10</td>
<td>0.62</td>
<td>0.70</td>
</tr>
<tr>
<td>skylight</td>
<td></td>
<td>SF 50</td>
<td>SF DAY</td>
<td>0.33</td>
<td>0.62</td>
<td>0.40</td>
</tr>
</tbody>
</table>

**Sub-Total This Floor 3,000**

| # Room Name   | 1,000  | SF 50  | SF VIS | 0.10   | 0.62 | 0.40 | 0.80 | 0.62 | 1.2 | 1000 |
| # Room Name   | 1,000  | SF 50  | SF DAY | 0.10   | 0.62 | 0.70 | 1.40 | 0.62 | 1.2 | 1000 |
| # Room Name   | 1,000  | SF 50  | SF VIS | 0.10   | 0.62 | 0.40 | 0.80 | 0.62 | 1.2 | 1000 |
| # Room Name   | 1,000  | SF 50  | SF DAY | 0.10   | 0.62 | 0.70 | 1.40 | 0.62 | 1.2 | 1000 |
| skylight      |        | SF 50  | SF DAY | 0.33   | 0.62 | 0.40 | 1.00 | 2.56 |     |      |

**Sub-Total This Floor 3,000**

| # Room Name   | 1,000  | SF 50  | SF VIS | 0.10   | 0.62 | 0.40 | 0.80 | 0.62 | 1.2 | 1000 |
| # Room Name   | 1,000  | SF 50  | SF DAY | 0.10   | 0.62 | 0.70 | 1.40 | 0.62 | 1.2 | 1000 |
| # Room Name   | 1,000  | SF 50  | SF VIS | 0.10   | 0.62 | 0.40 | 0.80 | 0.62 | 1.2 | 1000 |
| # Room Name   | 1,000  | SF 50  | SF DAY | 0.10   | 0.62 | 0.70 | 1.40 | 0.62 | 1.2 | 1000 |
| skylight      |        | SF 50  | SF DAY | 0.33   | 0.62 | 0.40 | 1.00 | 2.56 |     |      |

**Sub-Total This Floor 3,000**

**Sub-Total This Floor 3,000**

**Sub-Total This Floor 3,000**

**Sub-Total This Floor 3,000**

**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.

3/15/2007
## DAYLIGHT & VIEWS

**NYC School Construction Authority**

**NYC Green Schools Rating System**

### Views Calculation Form

#### Credit Q7.2

<table>
<thead>
<tr>
<th>Project:</th>
<th>Architect:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Address:</td>
<td>Preparer:</td>
</tr>
<tr>
<td>LLW #:</td>
<td>Design #:</td>
</tr>
<tr>
<td>Date:</td>
<td>Telephone:</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>RM #</th>
<th>RM NAME</th>
<th>Total Occupiable Area in SF</th>
<th>Step 1: Calculated Area with Direct Line of Sight to Perimeter Vision Glazing</th>
<th>Step 2: Horizontal View at 42in. (Y/N)</th>
<th>Compliant Area</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Floor Level</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>#</td>
<td>Room Name</td>
<td>1,000</td>
<td>750</td>
<td>YES</td>
<td>750</td>
</tr>
<tr>
<td>#</td>
<td>Room Name</td>
<td>1,000</td>
<td>750</td>
<td>YES</td>
<td>750</td>
</tr>
<tr>
<td>#</td>
<td>Room Name</td>
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<td>Sub-Total This Floor</td>
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<td>Floor Level</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>#</td>
<td>Room Name</td>
<td>1,000</td>
<td>750</td>
<td>YES</td>
<td>750</td>
</tr>
<tr>
<td>#</td>
<td>Room Name</td>
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<td>750</td>
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<tr>
<td>#</td>
<td>Room Name</td>
<td>1,000</td>
<td>750</td>
<td>YES</td>
<td>750</td>
</tr>
<tr>
<td>Sub-Total This Floor</td>
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<td></td>
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<tr>
<td>#</td>
<td>Room Name</td>
<td>1,000</td>
<td>750</td>
<td>YES</td>
<td>750</td>
</tr>
<tr>
<td>#</td>
<td>Room Name</td>
<td>1,000</td>
<td>750</td>
<td>YES</td>
<td>750</td>
</tr>
<tr>
<td>#</td>
<td>Room Name</td>
<td>1,000</td>
<td>750</td>
<td>YES</td>
<td>750</td>
</tr>
<tr>
<td>Sub-Total This Floor</td>
<td>3,000</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Floor Level</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>#</td>
<td>Room Name</td>
<td>1,000</td>
<td>750</td>
<td>YES</td>
<td>750</td>
</tr>
<tr>
<td>#</td>
<td>Room Name</td>
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<td>750</td>
<td>YES</td>
<td>750</td>
</tr>
<tr>
<td>#</td>
<td>Room Name</td>
<td>1,000</td>
<td>750</td>
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</tr>
<tr>
<td>Sub-Total This Floor</td>
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<tr>
<td>Grand Total SF</td>
<td>12,000</td>
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<td>9,000</td>
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</tbody>
</table>

**Percent Access to Views** 75.0%

Requirement to achieve credit Q 7.2 is Views for 90% of occupiable project area

Complies? (Y / N): 

### Notes

1. Line of sight may be drawn through interior glazing. For multi-occupant spaces, the actual square footage with direct line of sight to perimeter vision glazing is counted. For private offices, the entire square footage of the office can be counted if 75% or more of the area has direct line of sight to perimeter vision glazing.

2. 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.

3/15/2007
<table>
<thead>
<tr>
<th>Architect:</th>
<th>Firm Name:</th>
<th>Date:</th>
<th>Project Name:</th>
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<table>
<thead>
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<th>Address:</th>
<th>Project Address:</th>
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<table>
<thead>
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<th>Firm Name:</th>
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<table>
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<tr>
<th>Address:</th>
<th>Design Manager:</th>
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<table>
<thead>
<tr>
<th>Constr Specialist:</th>
<th>FID Reviewer:</th>
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</table>

<table>
<thead>
<tr>
<th>Commissioning:</th>
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<tbody>
<tr>
<td></td>
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</tbody>
</table>

---

**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 and are compliant with credit requirements of the NYC Green Schools Guide.

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.

<table>
<thead>
<tr>
<th>Name</th>
<th>Title</th>
<th>Signature</th>
<th>Date</th>
</tr>
</thead>
</table>

**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 and are compliant with credit requirements of the NYC Green Schools Guide.

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.

<table>
<thead>
<tr>
<th>Name</th>
<th>Title</th>
<th>Signature</th>
<th>Date</th>
</tr>
</thead>
</table>
S1.1R - Construction Activity Pollution Prevention
This credit applies to projects that are required to provide a full Stormwater Pollution Prevention Plan under
SPDES. For other projects, this credit is certified by the contractor in the construction phase.

An erosion and sedimentation control plan and narrative have been submitted that complies with 2003 EPA
Construction General Permit or NYS DEC SPDES General Permit for Construction Activity, whichever is
more stringent.

S1.2R - 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 whose pre-development elevation was less than 5-feet above the 100 year FEMA designated
flood elevation.

☐ Land that is specifically identified as habitat for any species on Federal or State threatened or
endangered species lists.

☐ Land within 100 feet of any wetlands as defined by U.S. 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.

☐ Previously undeveloped land that is within 50 feet of a water body, defined as seas, lakes, rivers,
streams and tributaries that support or could support fish, recreation or industrial use, consistent with
the terminology of the Clean Water Act.

☐ Land that 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.

S1.3 - 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 no fewer than 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, and
consider design options to address impact as necessary.

☐ 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.
S1.4 - Development Density and Community Connectivity
This project is on a previously developed site that meets one of the criteria indicated below.

☐ This project is on a previously developed site within a 1/2 mile of a residential zone/neighborhood AND
is within a 1/2 mile radius of at least 10 basic services and with pedestrian access to those services.
An annotated plan has been submitted as documentation.

OR

☐ This project is on a previously developed site AND in a community with a minimum density if 60,000
sqft per acre net. A Development Density Form has been submitted as documentation.

S1.5R - Joint Use of Facilities/Community Access
The building design facilitates shared use of facilities by the community. A narrative has been provided
describing design features incorporated to facilitate community access.

S1.6 - Brownfield Development
This project site was determined to be contaminated by the method indicated below. A narrative summary
of the site contamination and remediation approach have been provided. The information below is based on
documentation provided by the SCA to the design team on the brownfield/contamination status of this
project's site.

☐ ASTM E 1903-97 Phase II Environmental Site Assessment.

OR

☐ defined as a Brownfield by a New York City, New York State, or federal government agency.

OR

☐ Reg. 40CFR Part 763

OR

☐ local Voluntary Cleanup Program (Such as with NYC DEC).

S2.1 - Alternative Transportation / Public Transportation Access
This project site is within 1/2 mile (2,640 feet) pedestrian route of an existing, or planned and funded,
commuter rail, light rail or subway stations OR within 1/4 mile (1,320 feet) pedestrian route of at least one
stop on two different public bus lines as indicated below. A scaled annotated site plan showing the length
of the pedestrian route and identifying the stations has been provided as documentation. Summary
information is below.

<table>
<thead>
<tr>
<th>Distance to Stop/Station in Feet</th>
<th>Line Designation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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</tbody>
</table>
S2.2R - Alternative Transportation / Low Emitting & Fuel-Efficient Vehicles
This project implements one of the following alternative transportation strategies:

☐ No new parking is provided on this project site. A narrative has been provided summarizing proximity to public transportation and why no new parking is required.

OR

☐ If on-site parking is provided, 5% of spaces provided to be designated preferred parking spaces reserved for low-emitting and fuel-efficient vehicles, vanpool or carpool. A narrative and site plan outlining compliance have been provided as documentation.

S3.2 - Site Development: Maximize Open Space
For projects with no zoning-mandated open space requirement, the area of open vegetated space, qualifying hardscape or qualifying green roof for this project is equal to at least 20% of the site area. An annotated site plan with area information has been provided as documentation.

S4.1 - Stormwater Design Quality Control
This project was designed to include best management practices (BMPs) capable of treating stormwater runoff from 90% of the average annual rainfall. These BMPs are capable of removing 80% of the average annual post development total suspended solids (TSS) load. A narrative has been submitted describing Best Management Practices per NYSPDES and structural controls as documentation.

S5.1R - Light Pollution Reduction
☐ This project scope includes no exterior lighting.

OR

☐ The construction documents include automatic controls that turn off non-essential interior lighting during hours when the school is not in operation.

OR

☐ For projects with exterior lighting, a Lighting Power Density Form has been submitted including calculations for exterior site areas and building façade/landscape areas indicating compliance with the credit requirements.
### Water

#### W1.1R and W1.2R - Water Efficient Landscaping Reduce by 50%, 100%
This project reduces the use of potable water for landscape irrigation by doing one of the following:

- The landscaping designed does not require a permanent irrigation system using potable water. Any temporary irrigation systems called for in the construction documents for plant establishment are specified to be removed within one year of installation.

- OR

- The landscaping and irrigation system have been designed to reduce the use of potable water for irrigation from a calculated baseline. Calculations have been submitted based on methodology from LEED-NC 2.2, credit WE1.1 and updated based on final construction documents.

#### W2.1R, W2.2R and 2.3R - Water Use Reduction 20%, 30%, 40%
This project uses 40% less water than the baseline fixture performance requirements of the Energy Policy Act of 1992. A completed Water Use Reduction Form has been submitted for this project to demonstrate this.
<table>
<thead>
<tr>
<th>Energy</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>E1.2R - Refrigerant Management</strong></td>
</tr>
<tr>
<td>No CFC-based refrigerants have been used in the HVAC or refrigerant systems of this project. I have provided a completed Refrigerant Impact Form updated as necessary based on the final design submission. For modernization and renovation projects CFC-based refrigerants have not be re-used, non-CFC systems have been specified for any replacement equipment.</td>
</tr>
<tr>
<td><strong>E2.2R - Energy Management System Controls HVAC and Hot Water</strong></td>
</tr>
<tr>
<td>This project utilizes an open protocol Facility Management System (FMS) that controls the HVAC and Hot water systems.</td>
</tr>
<tr>
<td><strong>E3.1R - Minimum Energy Performance</strong></td>
</tr>
</tbody>
</table>
| This project’s construction documents comply with the following energy code requirements:  
- The mandatory provisions (Sections 5.4, 6.4, 7.24, 8.4, 9.4 and 10.4) of ASHRAE/IESNA Standard 90.1-2004 (without amendments)  
  AND  
- The prescriptive requirements (Sections 5.5, 6.5, 7.5 and 9.5) or performance requirements (Section 11) of ASHRAE/IESNA Standard 90.1-2004 (without amendments).  
  AND  
- I have provided the LL86 reporting form with energy system related information as documentation. |  
| **E4.1R - HVAC System Sizing, Avoid Over sizing** |  
| All major HVAC components of this project have been designed to correctly match loads to avoid system over-sizing.  
- Load calculations, design drawings and a written narrative rationale for selecting the specified equipment and establishing the most efficient system size and configuration. |  
| Materials |  
| **M1.1R - Storage and Collection of Recyclables** |  
| The final project construction documents include collection and storage areas for recyclable materials. The collection areas have been sized to meet the schools needs. The recycling area will accommodate recycling of plastics, metals, paper, cardboard and glass. |  
| **M2.4R - Provide Low - Mercury Lighting Reduce Mercury Waste** |  
| All the fluorescent lighting fixtures and lamping specified for this project are low-mercury. |  

3/15/07
Indoor Environmental Quality

Q1.1R - Minimum IAQ Performance and Increased Ventilation

This project implements the following strategies for improved Indoor Air Quality:

☐ The project meets the minimum requirements of Sections 4 through 7 of ASHRAE 62.1-2004 Ventilation for Acceptable Indoor Air Quality. Construction documents submitted reflect this compliance.

AND

☐ The mechanical system was designed using whichever ventilation rates are larger: the NYC DOB Code ventilation rates or 30% above the ASHRAE Standard 62.1-2004 breathing zone outdoor ventilation rates. The exceptions are cafeterias and multipurpose rooms served by rooftop units that also serve an associated kitchen. The mechanical systems for these cafeterias and multi-purpose rooms shall be designed using whichever ventilation rate is larger: NYC DOB Code ventilation rates or ASHRAE Standard 62.1-2004 breathing zone outdoor ventilation rates, without the 30% increase.

AND

☐ A design narrative has been provided describing this project’s ventilation design as documentation.

☐ This narrative includes specific information regarding fresh air intake volumes for each occupied zone to demonstrate that the design exceeds the referenced standard by at least 30%.

Q1.2R - Air Flow Stations

This project includes air flow stations on all outside air intakes of central heating, ventilating and air-conditioning equipment. Construction documents showing the air flow stations have been provided as documentation.

Q4.1R - Indoor Chemical & Pollutant Source Control

This project employs the following strategies to reduce exposure to potentially hazardous particulates and chemical pollutants:

☐ Entries have permanent entryway systems at least six feet long in the primary direction of travel that capture dirt and particulates.

AND

☐ All areas where hazardous gases and/or chemicals are present/used have been designed to be fully sealed from adjacent spaces and have been provided with an exhaust system that provides sufficient exhaust with respect to adjacent spaces to prevent cross-contamination to adjacent spaces.

AND

☐ Regularly occupied areas of the building are specified to have air filtration media that provides a Minimum Efficiency Reporting Value (MERV) of 13 or better.

AND

☐ A design narrative has been provided listing affected spaces, how they are sealed and separated and related exhaust systems.

Q4.2 R - Electric Ignition Stoves

This project employs only electric ignitions for gas-fired cooking appliances that have that capability. Specifications for cooking appliances have been provided as documentation.
Q4.3R - Specify HEPA Vacuums
The F&E Unit list for this project developed by the SCA/F&E Unit group includes only HEPA vacuums. The SCA has provided written documentation to the design team confirming HEPA vacuums are on the F&E Unit list for this project.

Q5.1R - Controllability of Systems, Lighting
This project has been designed with the following lighting controls:
- Lighting controllability has been provided for a minimum of 50% of the building occupants in regularly occupied spaces.
  - AND
- A narrative has been provided describing the project’s lighting control strategy. Information on the type and location of controls is included in that narrative.

Q5.2R - Controllability of Systems, Thermal Comfort
This project has been designed with the following thermal comfort controls:
- Comfort controls have been provided for a minimum of 50% of the building occupants in regularly occupied spaces.
  - AND
- A narrative has been provided describing the project’s comfort control strategy. Information on the type and location of controls is included in that narrative.

Q6.1R - Thermal Comfort, Comply with ASHRAE 55-2004
This project’s HVAC system and building envelope have been designed to meet the requirements of ASHRAE Standard 55-2004 Thermal Comfort Conditions for Human Occupancy.
- As documentation, a narrative has been provided describing the method used to establish the thermal comfort conditions. Relevant thermal data is included in the chart below:

<table>
<thead>
<tr>
<th>Season</th>
<th>Maximum Indoor Space Design Temperature Deg (F)</th>
<th>Minimum Indoor Space Design Temperature Deg (F)</th>
<th>Maximum Indoor Space Design Relative Humidity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spring</td>
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<tr>
<td>Summer</td>
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<td>Fall</td>
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<tr>
<td>Winter</td>
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</tr>
</tbody>
</table>
Q7.1 - Daylight & Views, Daylight 75% of Spaces
This project is designed to provide the building occupants a connection between indoor spaces and the outdoors through the introduction of daylight. A completed Daylight Calculation Form for this project has been provided, updated as necessary based on the final design documents. A detailed narrative has been provided describing any special areas excluded from compliance, and why daylighting would hinder these areas functions.

Q7.2 - Daylight & Views, View 90% of Spaces  Required if feasible
Occupants in 90% of regularly occupied spaces will have direct lines of site to perimeter glazing. A completed Views Calculation Form for this project has been provided, updated as necessary based on the final design documents. A detailed narrative has been provided describing any special areas excluded from compliance, and why views would hinder these areas functions.

Q7.3 - Visual Performance, Artificial Direct-Indirect Lighting
This project uses only pendant mounted high-efficacy T-8 fluorescent lamps in all classrooms. I have provided a lighting schedule and reflected ceiling plans as documentation.

Q8.1 - Minimum Acoustical Performance
This project employs the following strategies for good acoustic performance:

☐ Kindergarten through 6th Grade Classrooms have a maximum background noise level of 35 dBA.
   AND

☐ 7th through 12th Grade Classrooms have a maximum background noise level of 40 dBA.
   AND

☐ All classrooms have 0.6-second maximum (unoccupied) mid-frequency (average of 500, 1,000 and 2,000 Hz) reverberation times for classrooms with volumes of up to 10,000 ft³; 0.7-second maximum (unoccupied) mid-frequency reverberation time for classrooms of 10,000 to 20,000 ft³.
   AND

☐ A report from a qualified acoustical consultant has been provided as documentation.

Q8.2 - Sound Isolation for Special Spaces
This project has been designed to acoustically isolate loud rooms from noise sensitive spaces. A report from a qualified acoustical consultant has been submitted as documentation.

Q8.3 - Acoustic Windows
This building has acoustically rated windows with a minimum STC level for classrooms of 40, or higher as recommended by the acoustic consultant for this project. A report from a qualified acoustical consultant has been submitted as documentation.
Additional Credits

A1.1R - LEED Accredited Professional
There is a LEED accredited professional on the design team. Copy of accreditation certificate has been provided.

A2.1 - Heat Island Effect Roof
The roof surfaces comply with one of the following (annotated roof plan with area calculations has been submitted as documentation):

- The roof materials have a Solar Reflectance Index (SRI) equal to or greater than 79 for low sloped roofs (<2:12), and 29 for steep sloped roofs (>2:12) for a minimum of 75% of the roof surface.
  OR
- The roof has vegetation for at least 50% of the roof area.

- 75% of the roof area is covered with either roof materials having Solar Reflectance Index compliant with the standard listed above, or with vegetated roofs.

A2.2 - Stormwater Design Quantity Control
This project minimized stormwater runoff by implementing one of the following:

- Project site is on average less than 50% impervious. The post-development discharge rate is less than the pre-development rate.
  OR
- Project site is on average greater than 50% impervious. The post-development stormwater runoff has been decreased by 25%.
  AND
- Quantity calculations have been provided as documentation. A narrative has also been provided that describes site conditions, measures taken and controls implemented to prevent excessive velocities and associated erosion. The following chart has been completed for structural and non-structural Best Management Practices (BMPs).

<table>
<thead>
<tr>
<th>Best Management Practice</th>
<th>Description of BMP’s contribution to Stormwater Filtration</th>
<th>% of Annual Rainfall Volume treated by BMP</th>
</tr>
</thead>
<tbody>
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</tbody>
</table>
A3.1, A3.2, A3.3 and A3.4 - Optimize Energy Performance

Project specific energy cost reduction modeling has been completed for this project. A copy of the energy modeling report has been submitted, updated as necessary based on the final design submission.

The energy modeling program used was: 

The principal heat source is: 

The percentage of energy cost reduction per ASHRAE 90.1-1999 was: 

The percentage of energy cost reduction per ASHRAE 90.1-2004 was: 

☐ A LL86 reporting forms with energy system related calculations and energy reduction calculations has been provided as documentation.

A3.5 - Renewable Energy

Project specific energy cost reduction modeling has been completed for this project. The results from that modeling were used to project annual building energy costs and the percentage of energy use has been offset by on-site renewable sources.

Renewable Energy Source Summary

Renewable source: 

Back-up fuel used when renewable source unavailable: 

Rated capacity of the renewable energy source: 

Annual energy generated from renewable source: 

Renewable energy cost: 

The total annual proposed design site energy use: 

The total annual proposed design site energy cost: 

Percentage of annual energy cost saved by on-site renewable energy according to energy modeling calculations: 

A5.1 - Daylight in Classrooms

Daylight modeling has been conducted to demonstrate that the classrooms meet the daylight autonomy ratio specified in the credit text. Calculations and summary narrative have been submitted as documentation.
### Architect's Statement - Construction 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.

<table>
<thead>
<tr>
<th>Name</th>
<th>Title</th>
<th>Signature</th>
<th>Date</th>
</tr>
</thead>
</table>

### Engineer's Statement - Construction 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.

<table>
<thead>
<tr>
<th>Name</th>
<th>Title</th>
<th>Signature</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Architects Initials</td>
<td>Engineers Initials</td>
<td></td>
<td></td>
</tr>
<tr>
<td>---------------------</td>
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</tr>
</tbody>
</table>

### Site

**S3.1 - Site Development : Protect or Restore Habitat**

The project site was previously developed or graded and 50% of the site area was restored using native and/or adaptive plantings.

The total site area excluding the building footprint is:

The total site area that has been restored using native and/or adaptive plantings is:

The percentage of site that has been restored using native and/or adaptive plantings is:

### Water

There are no construction Phase Water Section credits.

### Energy

**E2.1R - Measurement & Verification**

This project implements a Measurement & Verification (M&V) Plan consistent with IPMVP Option C - Whole Building Comparison.

### Materials

**M1.2 & M1.3- Building Reuse 75%**

On this project the following percentage of the existing floor, wall and roof structure of the existing building were reused. I have provided a completed copy of the Building Reuse Form.

- [ ] 75%
- [ ] 95%

**M1.4 - Building Reuse 50% Interior**

On this project, 50% of the existing interior non-structural elements from the existing building were reused. I have provided a completed copy of the Building Reuse Form.

**M2.1R - Recycled Content 10%**

The materials for this project include 10% or more recycled content. A Recycled Content Summary Form has been submitted as documentation.
M2.2R - Regional Materials 10% Extracted, Processed & Manufactured Regionally

The materials for this project include 10% or more regional materials (extracted, processed and manufactured). A Regional Materials Summary Form has been submitted as documentation.

M 2.3R - Wallboard & Roofdeck Products

The wallboard and roofdeck products used in this project comply with the referenced mold resistance standards.

Indoor Environmental Quality

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

All adhesives and sealants used on the interior of the building comply with the VOC limits and requirements. A Low Emitting Materials - Summary Form has been submitted as documentation.

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

All paints and coatings used on the interior of the building comply with the VOC limits and requirements as established by Green Seal Standard GS-11 Paints, and Green Seal Standard GC-03, Anti-Corrosive Paints, and South Coast Air Quality Management District. A Low Emitting Materials - Summary Form has been submitted as documentation.

Q3.3R - Low Emitting Materials, Carpet Systems

All carpet and carpet cushions for the project meet the testing and product requirements of the Carpet and Rug Institute’s Green Label Plus program. A Low Emitting Materials - Summary Form has been submitted as documentation.

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

All composite wood and agrifiber products used on the interior of the building (defined as inside the weatherproofing system) contain no added urea-formaldehyde resins. Laminating adhesives used to fabricate on-site and shop-applied composite wood and agrifiber assemblies contain no added urea-formaldehyde resins.
Additional Credits

A4.1 - Additional Sustainable Materials
The materials for this project meet one of the following criteria. A descriptive narrative and summary calculations or form have been submitted as documentation. The percentage of materials indicated below is based on cost.

☐ The materials for this project include at least 20% or more recycled content. A Recycled Content Summary Form has been submitted as documentation.

OR

☐ The materials for this project include at least 20% or more regional materials (extracted, processed and manufactured). A Regional Materials Summary Form has been submitted as documentation.

OR

☐ The materials for this project include at least 2.5% rapidly renewable materials (made from plants that are typically harvested within a ten-year cycle or shorter)

A5.2 - Low Emitting Materials, Furniture
The SCA/FFE group has provided written documentation to the design team indicating that each furniture system (work station) and seating product item is Greenguard certified or registered or that its emissions meet or exceed the best practice air emissions standards as established by the US EPA’s Environmental Technology Verification (ETV).

A6.1 - Building as Educational Tool
Built-in architectural features or signage have been developed to communicate the sustainable features of this project. These are supported by educational program, literature or curriculum related to the sustainable features of this project. A descriptive narrative has been submitted as documentation.
Table 1: Construction Waste Management diversion Summary

<table>
<thead>
<tr>
<th>Diverted / Recycled Materials Description</th>
<th>Diversion / Recycling Hauler or Location</th>
<th>Quantity of Diverted / Recycled Waste</th>
<th>Units (tons or cubic yards)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Concrete</td>
<td></td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Wood</td>
<td></td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Gypsum Wallboard</td>
<td></td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Steel</td>
<td></td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Crushed Asphalt</td>
<td></td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Masonry</td>
<td></td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Cardboard</td>
<td></td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Other:</td>
<td></td>
<td>1</td>
<td></td>
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<tr>
<td>Other:</td>
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<td>1</td>
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<td>Other:</td>
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<td>Other:</td>
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</tr>
<tr>
<td>TOTAL CONSTRUCTION WASTE DIVERTED</td>
<td></td>
<td>23</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Landfill materials Description</th>
<th>Landfill Hauler or Location</th>
<th>Quantity of Diverted / Recycled Waste</th>
<th>Units (tons or cubic yards)</th>
</tr>
</thead>
<tbody>
<tr>
<td>General Mixed Waste</td>
<td></td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Other:</td>
<td></td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Other:</td>
<td></td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>TOTAL CONSTRUCTION WASTE SENT TO LANDFILL</td>
<td></td>
<td>3</td>
<td></td>
</tr>
</tbody>
</table>

TOTAL OF ALL CONSTRUCTION WASTE 26
PERCENTAGE OF CONSTRUCTION WASTE DIVERTED FROM LANDFILL 88%
**Definitions:**

* Post-Consumer Recycled Content: Material or finished product that has served its intended consumer use and has been discarded 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 include 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 vary one 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: _____________

3/15/07 This form may be downloaded from SCA web site
<table>
<thead>
<tr>
<th>Spec. Section (in CSI order)</th>
<th>Material</th>
<th>Vendor/Sub-Contractor Name</th>
<th>Recycled Content Documentation</th>
<th>Regional Content Documentation</th>
<th>Cost Information</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>For which recycled or regional content documentation must be submitted</td>
<td>Required (Yes/No)</td>
<td>Submitted (Date)</td>
<td>Required (Yes/No)</td>
<td>Submitted (Date)</td>
</tr>
<tr>
<td>02200</td>
<td>Earthwork</td>
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<td></td>
</tr>
<tr>
<td>02512/3</td>
<td>Asphalt Pavement</td>
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<tr>
<td>02900</td>
<td>Landscape Materials</td>
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<tr>
<td>03300</td>
<td>Foundation Concrete</td>
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<tr>
<td>03300</td>
<td>Cast-in-place Concrete</td>
<td></td>
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</tr>
<tr>
<td>04200</td>
<td>Concrete masonry Units</td>
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</tr>
<tr>
<td>04200</td>
<td>Brick</td>
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<td>04435</td>
<td>Cast Stone</td>
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<tr>
<td>05120</td>
<td>Structural Steel</td>
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<tr>
<td>05210/20/30</td>
<td>Steel Joists</td>
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<td>05710</td>
<td>Steel Stairs</td>
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<td>Batt Insulation</td>
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<td>07212</td>
<td>Rigid Insulation</td>
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<tr>
<td>07250</td>
<td>Sprayed Fire Resistive Materials</td>
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</tr>
<tr>
<td>07560</td>
<td>Roofing Membrane</td>
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<td>Roofing Insulation</td>
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<td>Steel Doors and Frames</td>
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<td>Gypsum Wall Board and Cement bd</td>
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<td>09650</td>
<td>Vinyl Comp. Tile and Sheet Flooring</td>
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<tr>
<td>09680</td>
<td>Carpet</td>
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<tr>
<td>10151</td>
<td>Toilet and Dressing Rooms Compartment</td>
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<tr>
<td>10505</td>
<td>Lockers</td>
<td></td>
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</tr>
</tbody>
</table>

Note: For Tracking Form Initial Submission include any vendor/subcontractor names available and complete yes/no boxes.
Commissioning Agent Certification Form
POST CONSTRUCTION PHASE ONLY

LLW #: ___________________________  Date: ___________________________
Design #: _________________________  Project Name: _______________________
FID #: ___________________________  Project Address: _______________________
Design Manager: ____________________
FID Reviewer: _______________________  Commissioning: _______________________

Commissioning Agent’s Statement - Construction Phase:

As Commissioning Agent, I verify to the best of my knowledge and belief, that the NYC Green Schools Guide credit requirements, for commissioning, have been achieved as indicated below.

Name ___________________________  Title ___________________________  Signature ___________________________  Date ___________________________

E1.1R - Enhanced Commissioning

☐ There CxA has conducted at least one Commissioning Design Review of the Owner's Project Requirements (OPR), Basis of Design and the design documents prior to mid-construction document phase and back-checked the CxA comments in the subsequent design submissions.

☐ Commissioning requirements have been incorporated into the construction documents.

☐ A commissioning plan has been developed and utilized.

☐ The CxA has reviewed contractor submittals for compliance with the Owners Project Requirements and the Basis of Design for the following systems: HVAC, lighting controls, domestic hot water, fire alarm and emergency generator.

☐ The installation and performance of the following systems have been verified: HVAC, lighting controls, domestic hot water, fire alarm and emergency generator.

☐ A systems manual has been prepared for the project that provides operating staff the information needed to understand and optimally operate the following systems: HVAC, lighting controls, domestic hot water, fire alarm and emergency generator.

- Items required for this manual that are not developed by the contractor have been provided and incorporated. These items include the final basis of design and the recommended schedules for maintenance, testing, and calibration.

☐ Appropriate DSF staff have been trained in the operation and maintenance of the following systems: HVAC, lighting controls, domestic hot water, fire alarm and emergency generator.

☐ The CxA has reviewed building operations within 10 months after substantial completion and a plan for resolution of outstanding issues has been completed for the following systems: HVAC, lighting controls, domestic hot water, fire alarm and emergency generator.

☐ A commissioning report has been completed.

3/15/07
Contractor’s Certification Form

CONSTRUCTION PHASE

NYC School Construction Authority
NYC Green Schools Rating System

Contractor: ___________________________ Firm Name: ___________________________ Date: ___________________________
Address: _______________________________ Project Name: ___________________________
Telephone: _______________________________ Project Address: ___________________________
email: ________________________________

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 specification Section 02200.

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 501524.

M 1.6 - 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 501524.
Indoor Environmental Quality

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

☐ A copy of the Indoor Air Quality (IAQ) Management Plan for construction developed and implemented for this project has been submitted as documentation in accordance with Specification Section 01550.

☐ Permanently installed air handling equipment was not used during construction.

☐ Permanently installed air handling equipment was used during construction. The chart below has been completed for filtration media used during construction.

<table>
<thead>
<tr>
<th>Merv Rating</th>
<th>Filter Manufacturer</th>
<th>Filter Model #</th>
<th>Location of Installed Filter</th>
<th>Filter Replaced immediately prior to Occupancy (YES or NO)</th>
</tr>
</thead>
<tbody>
<tr>
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</tr>
</tbody>
</table>

☐ I have provided six photos showing IAQ practices which were used during the building construction from SMACNA IAQ Guideline for Occupied Buildings under Construction, 1995, Chapter 3. Each photo is labelled indicating which SMACNA IAQ practice is shown.

☐ For Phased Occupancy or Modernization Projects, a letter has been submitted stating that carpeting in occupied areas was HEPA vacuumed daily.

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

☐ A building flush-out was carried out per the specification requirements in Specification Section 01550.

☐ 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.
**CITY OF NEW YORK LOCAL LAW 86/2005 REPORTING SUMMARY** - DRAFT

*This form is intended to indicate the complete range of information that could be reported on projects captured by Local Law 86. Note that any one project will need to report only a fraction of the total range. Depending on the project, reporting may be required at the end of project scoping (Phase I), final project design (Phase II), before the end of the warranty period (Phase III) as well as within two years after the warranty period (Phase IV). Note that each time a report is submitted, information submitted in previous phases may need to be updated. Once the relevant information is collected, the Reporting Agency is responsible at each phase for entering it into the electronic database maintained by DoITT.*

<table>
<thead>
<tr>
<th>Project general information</th>
<th>Phase Reporting - phase in which line(s) must be filled out or updated per instructions</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Reporting Agency…………….………………...………………………</td>
<td>1</td>
</tr>
<tr>
<td>2 Client Agency…………….………………...………………………</td>
<td>2</td>
</tr>
<tr>
<td>3 Date of CP for Design or CP for Design and Construction…………</td>
<td>3</td>
</tr>
<tr>
<td>4 Date of CP for Construction……………………..….…………...……</td>
<td>4</td>
</tr>
<tr>
<td>5 Date of End of Warranty Period………………...…………………….</td>
<td>5</td>
</tr>
<tr>
<td>6 Project Name and Address:</td>
<td>6</td>
</tr>
<tr>
<td>7 BIN………………………………………………………………………</td>
<td>7</td>
</tr>
<tr>
<td>8 Block and Lot……………………………………………………………</td>
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</tr>
<tr>
<td>9 Project FMS # …………………………………………………………</td>
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</tr>
<tr>
<td>10 Primary Occupancy Group……………………………………………</td>
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<tr>
<td>11 Total Floor Area - Sq Ft……………………………………………..</td>
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</tr>
<tr>
<td>12 Affect Floor Area - Sq Ft…………………………………………..</td>
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</tr>
<tr>
<td>13 Indexed Construction Cost (CC) - $(1,000's)..……………………..</td>
<td>13</td>
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</table>

**LEED Project Energy Cost Reduction**

- 20-25% Operating Energy Cost Reduction (Occupancies other than G; $12M<CC<$30M)
- 25-30% Operating Energy Cost Reduction (Occupancies other than G; CC>$30M)
- 20-30% Operating Energy Cost Reduction (Only G Occupancies; $12M<CC)

**LEED Rating**

- LEED Silver Requirement or Equivalent (All occupancies except G, H-2, A, D, F-2, J)
- LEED Certified Requirement or Equivalent (Only G, H-2 Occupancies)
- Verification by the USGBC for LEED Requirement

**System Specific Project Energy Cost Reduction**

- Boiler - 10% Operating Energy Cost Reduction (CC>$2M)
- Lighting - 10% Operating Energy Cost Reduction (CC>$1M)
- HVAC - 5% Operating Energy Cost Reduction (CC>$2M)

**Potable Water Use Reduction**

- LEED & System Specific Potable Water Use Reduction Requirement - min. 20%
- LEED & System Specific Potable Water Use Reduction Requirement - min. 30%

**LEED Project Energy Cost Reduction**

- 20-25% Operating Energy Cost Reduction (Occupancies other than G; $12M<CC<$30M)
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- LEED & System Specific Potable Water Use Reduction Requirement - min. 30%
<table>
<thead>
<tr>
<th>LEED Information</th>
<th>LEED Information</th>
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<tbody>
<tr>
<td>28 LEED rating system and version used, if applicable. If there is no LEED requirement, leave blank.</td>
<td>28 LEED rating system and version used, if applicable. If there is no LEED requirement, leave blank.</td>
</tr>
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<td>29 LEED Ratings Targeted:</td>
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<td>☐ PLATINUM</td>
</tr>
<tr>
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<td>☐ SILVER</td>
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<td>a Applying for Certification with the USGBC</td>
</tr>
<tr>
<td>b USGBC Project Name:</td>
<td>b USGBC Project Name:</td>
</tr>
<tr>
<td>c USGBC User Name:</td>
<td>c USGBC User Name:</td>
</tr>
<tr>
<td>d USGBC Password:</td>
<td>d USGBC Password:</td>
</tr>
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<tr>
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<td>c USGBC Password:</td>
<td>c USGBC Password:</td>
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<td>☐ GOLD</td>
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### Applicable Operating Energy Provider and Rate Plan

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<thead>
<tr>
<th>34 Electricity Provider</th>
<th>34 Electricity Provider</th>
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<tbody>
<tr>
<td>☐ NYPA</td>
<td>☐ CON ED</td>
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<tr>
<td>☐ CONVENTIONAL</td>
<td>☐ CON ED</td>
</tr>
<tr>
<td>☐ OTHER*</td>
<td>☐ OTHER*</td>
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### Electricity Rate Plan

<table>
<thead>
<tr>
<th>35 Electricity Rate Plan</th>
<th>35 Electricity Rate Plan</th>
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</thead>
<tbody>
<tr>
<td>☐ TIME OF DAY</td>
<td>☐ TEMP. CONTROL</td>
</tr>
<tr>
<td>☐ KEY SPAN</td>
<td>☐ OFF-PEAK FIRM</td>
</tr>
<tr>
<td>☐ OTHER*</td>
<td>☐ OTHER*</td>
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### Natural Gas Rate Plan

<table>
<thead>
<tr>
<th>36 Natural Gas Provider</th>
<th>36 Natural Gas Provider</th>
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</thead>
<tbody>
<tr>
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<td>☐ CON ED</td>
</tr>
<tr>
<td>☐ OTHER*</td>
<td>☐ OTHER*</td>
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### Purchased Steam Provider

<table>
<thead>
<tr>
<th>38 Purchased Steam Provider</th>
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</thead>
<tbody>
<tr>
<td>☐ CON ED</td>
<td>☐ CON ED</td>
</tr>
<tr>
<td>☐ OTHER*</td>
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### Distillate Oil (#2) Provider

<table>
<thead>
<tr>
<th>39b Distillate Oil (#2) Provider</th>
<th>39b Distillate Oil (#2) Provider</th>
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<tbody>
<tr>
<td>☐ OTHER*</td>
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### Residual Oil (#6) Provider

<table>
<thead>
<tr>
<th>39c Residual Oil (#6) Provider</th>
<th>39c Residual Oil (#6) Provider</th>
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<tbody>
<tr>
<td>☐ OTHER*</td>
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### Mixed Oil (#4) Provider

<table>
<thead>
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<th>39c Mixed Oil (#4) Provider</th>
<th>39c Mixed Oil (#4) Provider</th>
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<tbody>
<tr>
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### Design Case for Calculating Annual Energy Use Reduction Using LEED Methodology

#### Electricity - NYPA Conventional Rate Plan

<table>
<thead>
<tr>
<th>40a Summer Energy Use (kWh/yr)</th>
<th>40a Summer Energy Use (kWh/yr)</th>
</tr>
</thead>
<tbody>
<tr>
<td>☐ Winter Energy Use (kWh/yr)</td>
<td>☐ Winter Energy Use (kWh/yr)</td>
</tr>
<tr>
<td>☐ Summer on-Peak (kWh/yr)</td>
<td>☐ Winter on-Peak (kWh/yr)</td>
</tr>
<tr>
<td>☐ Summer Off-Peak (kWh/yr)</td>
<td>☐ Winter Off-Peak (kWh/yr)</td>
</tr>
<tr>
<td>☐ Winter on-Peak (kWh/yr)</td>
<td>☐ Winter Off-Peak (kWh/yr)</td>
</tr>
<tr>
<td>☐ Summer on-Peak Monthly Peak Demand (kWh/yr)</td>
<td>☐ Sum of Monthly Peak Demand (kWh/yr)</td>
</tr>
<tr>
<td>☐ Summer Off-Peak Monthly Peak Demand (kWh/yr)</td>
<td>☐ Summer Off-Peak Monthly Peak Demand (kWh/yr)</td>
</tr>
<tr>
<td>☐ Winter on-Peak Monthly Peak Demand (kWh/yr)</td>
<td>☐ Winter Off-Peak Monthly Peak Demand (kWh/yr)</td>
</tr>
<tr>
<td>☐ Summer Sum of Monthly Peak Demand (kWh/yr)</td>
<td>☐ Winter Sum of Monthly Peak Demand (kWh/yr)</td>
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<tr>
<td>☐ Winter Sum of Monthly Peak Demand (kWh/yr)</td>
<td>☐ Winter Sum of Monthly Peak Demand (kWh/yr)</td>
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</tbody>
</table>

#### Electricity - NYPA Time of Day Rate Plan

<table>
<thead>
<tr>
<th>41a Summer Energy Use On-Peak (kWh/yr)</th>
<th>41a Summer Energy Use On-Peak (kWh/yr)</th>
</tr>
</thead>
<tbody>
<tr>
<td>☐ Winter Energy Use On-Peak (kWh/yr)</td>
<td>☐ Winter Energy Use On-Peak (kWh/yr)</td>
</tr>
<tr>
<td>☐ Summer Energy Use Off-Peak (kWh/yr)</td>
<td>☐ Winter Energy Use Off-Peak (kWh/yr)</td>
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<tr>
<td>☐ Winter Energy Use Off-Peak (kWh/yr)</td>
<td>☐ Winter Energy Use Off-Peak (kWh/yr)</td>
</tr>
<tr>
<td>☐ Summer Sum of Monthly Peak Demand (kWh/yr)</td>
<td>☐ Summer Sum of Monthly Peak Demand (kWh/yr)</td>
</tr>
<tr>
<td>☐ Winter Sum of Monthly Peak Demand (kWh/yr)</td>
<td>☐ Winter Sum of Monthly Peak Demand (kWh/yr)</td>
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</tbody>
</table>

#### Electricity - Con Ed Conventional Rate Plan

<table>
<thead>
<tr>
<th>42a Summer Energy Use (kWh/yr)</th>
<th>42a Summer Energy Use (kWh/yr)</th>
</tr>
</thead>
<tbody>
<tr>
<td>☐ Winter Energy Use (kWh/yr)</td>
<td>☐ Winter Energy Use (kWh/yr)</td>
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<tr>
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<td>☐ Summer Off-Peak (kWh/yr)</td>
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<tr>
<td>☐ Winter on-Peak (kWh/yr)</td>
<td>☐ Winter Off-Peak (kWh/yr)</td>
</tr>
<tr>
<td>☐ Summer on-Peak Monthly Peak Demand (kWh/yr)</td>
<td>☐ Sum of Monthly Peak Demand (kWh/yr)</td>
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<tr>
<td>☐ Summer Off-Peak Monthly Peak Demand (kWh/yr)</td>
<td>☐ Summer Off-Peak Monthly Peak Demand (kWh/yr)</td>
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<td>☐ Winter on-Peak Monthly Peak Demand (kWh/yr)</td>
<td>☐ Winter Off-Peak Monthly Peak Demand (kWh/yr)</td>
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<tr>
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<td>☐ Winter Sum of Monthly Peak Demand (kWh/yr)</td>
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<tr>
<td>☐ Winter Sum of Monthly Peak Demand (kWh/yr)</td>
<td>☐ Winter Sum of Monthly Peak Demand (kWh/yr)</td>
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</tbody>
</table>

#### Electricity - Con Ed Time of Day Rate Plan

<table>
<thead>
<tr>
<th>43a Summer Energy Use On-Peak (kWh/yr)</th>
<th>43a Summer Energy Use On-Peak (kWh/yr)</th>
</tr>
</thead>
<tbody>
<tr>
<td>☐ Winter Energy Use On-Peak (kWh/yr)</td>
<td>☐ Winter Energy Use On-Peak (kWh/yr)</td>
</tr>
<tr>
<td>☐ Summer Energy Use Off-Peak (kWh/yr)</td>
<td>☐ Winter Energy Use Off-Peak (kWh/yr)</td>
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<td>☐ Winter Energy Use Off-Peak (kWh/yr)</td>
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</tr>
<tr>
<td>☐ Summer Sum of Monthly Peak Demand (kWh/yr)</td>
<td>☐ Summer Sum of Monthly Peak Demand (kWh/yr)</td>
</tr>
<tr>
<td>☐ Winter Sum of Monthly Peak Demand (kWh/yr)</td>
<td>☐ Winter Sum of Monthly Peak Demand (kWh/yr)</td>
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</tbody>
</table>

#### Natural Gas - Mbtu/yr

<table>
<thead>
<tr>
<th>44a Summer</th>
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</tr>
</thead>
<tbody>
<tr>
<td>☐ Winter</td>
<td>☐ Winter</td>
</tr>
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</table>

#### Steam - mbps/yr

<table>
<thead>
<tr>
<th>45a Summer</th>
<th>☐ Winter</th>
</tr>
</thead>
<tbody>
<tr>
<td>☐ Winter</td>
<td>☐ Winter</td>
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</tbody>
</table>

#### Distillate Oil (#2) - gals/yr

<table>
<thead>
<tr>
<th>46a Summer</th>
<th>☐ Winter</th>
</tr>
</thead>
<tbody>
<tr>
<td>☐ Winter</td>
<td>☐ Winter</td>
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</table>

#### Residual Oil (#6) - gals/yr

<table>
<thead>
<tr>
<th>47a Summer</th>
<th>☐ Winter</th>
</tr>
</thead>
<tbody>
<tr>
<td>☐ Winter</td>
<td>☐ Winter</td>
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#### Mixed Oil (#4) - gals/yr

<table>
<thead>
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<td>49a Sum of Monthly Peak Demand (kW/yr)</td>
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<tr>
<td>Winter Energy Use (kWh/yr)</td>
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<tr>
<td>Summer Energy Use (kWh/yr)</td>
<td>c</td>
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<tr>
<td>Electricity - NYPA Time of Day Rate Plan</td>
<td>50a Winter Energy Use Off-Peak (kWh/yr)</td>
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<td>c</td>
<td>Winter Energy Use On-Peak (kWh/yr)</td>
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<tr>
<td>d</td>
<td>Winter Energy Use Off-Peak (kWh/yr)</td>
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<tr>
<td>e</td>
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<td>Electricity - Con Ed Conventional Rate Plan</td>
<td>53a Winter Energy Use (kWh/yr)</td>
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<td>Natural Gas - Mbtu/yr</td>
<td>54a Steam - mbts/yr</td>
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<td>Winter</td>
<td>b</td>
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<td>Distillate Oil (#2) - gals/yr</td>
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</tr>
<tr>
<td>c</td>
<td>Sum of Monthly Peak Demand (kW/yr)</td>
</tr>
<tr>
<td>Electricity - NYPA Time of Day Rate Plan</td>
<td>59a Winter Energy Use Off-Peak (kWh/yr)</td>
</tr>
<tr>
<td>c</td>
<td>Winter Energy Use On-Peak (kWh/yr)</td>
</tr>
<tr>
<td>d</td>
<td>Winter Energy Use Off-Peak (kWh/yr)</td>
</tr>
<tr>
<td>e</td>
<td>Winter Sum of Monthly Peak Demand (kW/yr)</td>
</tr>
<tr>
<td>f</td>
<td>Winter Sum of All Hours Monthly Peak Demand (kW/yr)</td>
</tr>
<tr>
<td>Electricity - Con Ed Conventional Rate Plan</td>
<td>60a Winter Energy Use (kWh/yr)</td>
</tr>
<tr>
<td>b</td>
<td>Winter Energy Use (kWh/yr)</td>
</tr>
<tr>
<td>c</td>
<td>Sum of Monthly Peak Demand (kW/yr)</td>
</tr>
<tr>
<td>Electricity - Con Ed Time of Day Rate Plan</td>
<td>61a Winter Energy Use Off-Peak (kWh/yr)</td>
</tr>
<tr>
<td>c</td>
<td>Winter Energy Use On-Peak (kWh/yr)</td>
</tr>
<tr>
<td>d</td>
<td>Winter Energy Use Off-Peak (kWh/yr)</td>
</tr>
<tr>
<td>e</td>
<td>Winter Sum of Monthly Peak Demand (kW/yr)</td>
</tr>
<tr>
<td>f</td>
<td>Winter Sum of All Hours Monthly Peak Demand (kW/yr)</td>
</tr>
<tr>
<td>Natural Gas - Mbtu/yr</td>
<td>62a Steam - mbts/yr</td>
</tr>
<tr>
<td>Winter</td>
<td>b</td>
</tr>
<tr>
<td>Distillate Oil (#2) - gals/yr</td>
<td>63a Winter</td>
</tr>
<tr>
<td>b</td>
<td>[Data]</td>
</tr>
<tr>
<td>Residual Oil (#6) - gals/yr</td>
<td>64a Winter</td>
</tr>
<tr>
<td>b</td>
<td>[Data]</td>
</tr>
<tr>
<td>Mixed Oil (#4) - gals/yr</td>
<td>65a Winter</td>
</tr>
<tr>
<td>b</td>
<td>[Data]</td>
</tr>
</tbody>
</table>

**Base Case for calculating annual energy use reduction using LEED NC 2.1 methodology.**

**Required for system specific projects and for LEED projects over $12M.**

**For LEED projects, include non-regulated load estimates in the calculation.**

**Base Case for calculating annual energy use reduction using LEED NC 2.2 methodology.**

**Only required for LEED projects seeking "Optimize Energy Performance" LEED credits.**
### Electricity - NYPAs Conventional Rate Plan

<table>
<thead>
<tr>
<th>Energy Year</th>
<th>Energy Use (kWh/yr)</th>
<th>Energy Charge</th>
<th>Demand Charge</th>
</tr>
</thead>
<tbody>
<tr>
<td>Summer</td>
<td>67a</td>
<td>0.052345/kWh</td>
<td>$21.82/kW</td>
</tr>
<tr>
<td>Winter</td>
<td>67b</td>
<td>0.052345/kWh</td>
<td>$21.82/kW</td>
</tr>
<tr>
<td>Non-LEED Project</td>
<td>68a</td>
<td>0.08544/kWh</td>
<td>$32.30/kW</td>
</tr>
<tr>
<td>Resident Project</td>
<td>68b</td>
<td>0.037/kWh</td>
<td>$12.00/kW</td>
</tr>
</tbody>
</table>

#### Energy Charge

- **Time of Day**: On-Peak
- **Rate**: $0.077/kWh
- **Demand**: $21.82/kW

#### Demand Charge

- **Time of Day**: Off-Peak
- **Rate**: $0.037/kWh
- **Demand**: $12.00/kW

#### Construction Waste Management

- **Yearly Totals**: Summers: 69a, 70a, 71a, 72a
- **Costs**: Summer: 69b, 70b, 71b, 72b

#### Distillate Oil (#2) - gals/yr

- **Yearly Totals**: Summers: 73a, 74a, 75a, 76a
- **Costs**: Summer: 73b, 74b, 75b, 76b

#### Residual Oil (#6) - gals/yr

- **Yearly Totals**: Summers: 77a, 78a, 79a, 80a
- **Costs**: Summer: 77b, 78b, 79b, 80b

#### Mixed Oil (#4) - gals/yr

- **Yearly Totals**: Summers: 81a, 82a, 83a, 84a
- **Costs**: Summer: 81b, 82b, 83b, 84b

#### Recycling Content

- **Yearly Totals**: Summers: 85a, 86a, 87a, 88a
- **Costs**: Summer: 85b, 86b, 87b, 88b

#### Construction Waste Generated

- **Yearly Totals**: Summers: 89a, 90a, 91a
- **Costs**: Summer: 89b, 90b, 91b

#### Incremental Construction Cost Indicators

- **Yearly Totals**: Summers: 92a, 93a, 94a
- **Costs**: Summer: 92b, 93b, 94b

---

**Energy Rates:** For Reference Only. Note that these rates may be revised prior to Phase II Reporting.

### Natural Gas - Mbd/yr

<table>
<thead>
<tr>
<th>Yearly Totals</th>
<th>Costs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Summer</td>
<td>95a</td>
</tr>
<tr>
<td>Winter</td>
<td>95b</td>
</tr>
</tbody>
</table>

### Stream - mls/yr

<table>
<thead>
<tr>
<th>Yearly Totals</th>
<th>Costs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Summer</td>
<td>96a</td>
</tr>
<tr>
<td>Winter</td>
<td>96b</td>
</tr>
</tbody>
</table>

### Distillate Oil (#2) - gals/yr

<table>
<thead>
<tr>
<th>Yearly Totals</th>
<th>Costs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Summer</td>
<td>97a</td>
</tr>
<tr>
<td>Winter</td>
<td>97b</td>
</tr>
</tbody>
</table>

### Residual Oil (#6) - gals/yr

<table>
<thead>
<tr>
<th>Yearly Totals</th>
<th>Costs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Summer</td>
<td>98a</td>
</tr>
<tr>
<td>Winter</td>
<td>98b</td>
</tr>
</tbody>
</table>

### Mixed Oil (#4) - gals/yr

<table>
<thead>
<tr>
<th>Yearly Totals</th>
<th>Costs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Summer</td>
<td>99a</td>
</tr>
<tr>
<td>Winter</td>
<td>99b</td>
</tr>
</tbody>
</table>

### Recycling Content

<table>
<thead>
<tr>
<th>Yearly Totals</th>
<th>Costs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Summer</td>
<td>100a</td>
</tr>
<tr>
<td>Winter</td>
<td>100b</td>
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</table>

### Construction Waste Diverted

<table>
<thead>
<tr>
<th>Yearly Totals</th>
<th>Costs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Summer</td>
<td>101a</td>
</tr>
<tr>
<td>Winter</td>
<td>101b</td>
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</tbody>
</table>

### Construction Waste Generated

<table>
<thead>
<tr>
<th>Yearly Totals</th>
<th>Costs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Summer</td>
<td>102a</td>
</tr>
<tr>
<td>Winter</td>
<td>102b</td>
</tr>
</tbody>
</table>

### Incremental Construction Costs

<table>
<thead>
<tr>
<th>Yearly Totals</th>
<th>Costs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Summer</td>
<td>103a</td>
</tr>
<tr>
<td>Winter</td>
<td>103b</td>
</tr>
</tbody>
</table>

### Design Consultant Fee

<table>
<thead>
<tr>
<th>Yearly Totals</th>
<th>Costs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Summer</td>
<td>104a</td>
</tr>
<tr>
<td>Winter</td>
<td>104b</td>
</tr>
</tbody>
</table>

### LEED Registration and Filing Fee

<table>
<thead>
<tr>
<th>Yearly Totals</th>
<th>Costs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Summer</td>
<td>105a</td>
</tr>
<tr>
<td>Winter</td>
<td>105b</td>
</tr>
</tbody>
</table>