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ECO ARCHITECTURE, PC



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Green Buildings in Baltimore



**Gordon & Greenburg Architects,
Fairfield Inn & Suites**



Marks Thomas Architecture Office



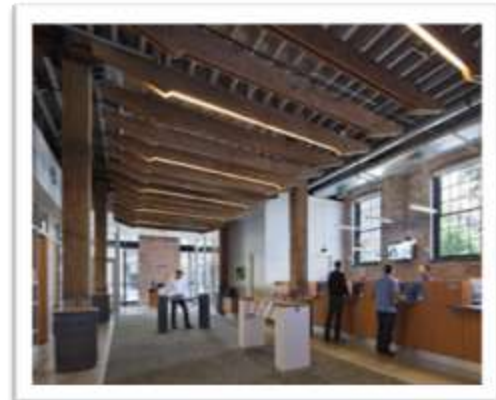
**HDR Architects,
Johns Hopkins Cancer Research**



**Ziger/Snead Architects,
Herring Run Education Center**



Whiting-Turner. UMD BioPark Building II



Gensler, PNC Bank Harbor East

Team TerraLogos:



TERRALOGOS
ECO ARCHITECTURE, PC

CCJM

C.C. Johnson & Malhotra, P.C.
Engineering Infrastructure Solutions



TerraLogos: eco architecture, pc
Prime Consultant

CCJM Engineers, Ltd
Engineering Infrastructure Solutions

ATI, Inc. Architects & Engineers
ImpactHR

RBA Ecologic Studio
Thomas Point Associates

Introduction to the Baltimore City Green Building *Standards*

- ❖ What are the *Standards* or BCGBS?
- ❖ How do the *Standards* work ?
- ❖ Alternatives and near misses

What are the *Standards* or **BCGBS** ?

The *Standards* are the requirements by which the City will ensure the design and construction of **green buildings** for public and private development in Baltimore.



Introduction to the *Standards*

The *Standards* are the regulations and process by which the City will ensure the design and construction of **green buildings** for public and private development in Baltimore.

1

BALTIMORE CITY GREEN BUILDING
STANDARDS
VOLUME 1: REGULATIONS MANUAL

2

BALTIMORE CITY
GREEN BUILDING STANDARDS
VOLUME 2: REFERENCE GUIDE

A

BALTIMORE CITY GREEN BUILDING
STANDARDS
APPENDIX: REFERENCES & FORMS

***The Standards* or BCGBS:**

- Fulfill the **Requirements** of the City Green Building Ordinance (2007)
See Chap 37_Baltimore Code
- Based on **LEED® v3.0 – 2009**
- Integrated with existing permit and inspection processes



Definitions – what is a covered building?

Covered Buildings subject to the Baltimore City Green Building Ordinance include:

- New construction greater than 10,000 GSF
- Addition, size greater than 10,000 GSF
- Existing building greater than 10,000 GSF **AND** extensively modified area greater than 50% of the entire building.



5 Rating Programs

- New Buildings /Maj Renov = *LEED NC*
- Education = *LEED for Schools*
- Spec Development = *LEED C+S*
- Tenant Fit Out = *LEED CI*
- **Section 2 – Systems Replacement**



Definitions – Section 2 Projects?

Section 2 Projects: Buildings meeting the definition for Covered Buildings

- Limited to systems replacement only –
 - ✓ Electrical
 - ✓ Lighting
 - ✓ Mechanical & HVAC
 - ✓ Plumbing
 - ✓ Fire suppression
- Follow the *Standards* Section 2 Scorecard.
- Not eligible for the LEED® Pathway.



The BCGBS Rating System

BCGBS 2-Green Stars (Or higher)

- 150 total possible points
- 65 points needed (43% of total available)
- Varied credit types – Automatic, Pledge, etc
- One plan set for permits and BCGBS review
- Certification awarded in same timeline as Certificate of Occupancy

Key elements of the Standards:

- ❑ 5 Rating programs NB/MR; EDU; Spec Devel; Tenant Fit Out; Section 2 – Systems Replacement
- ❑ 5 rating levels **2-Green Star** (65 points min.) equivalent to LEED Silver
- ❑ Part of regular permit review process, submit **Standards Verification Package** along with the regular permit application – DESIGN CREDITS & CONSTRUCTION CREDITS
- ❑ Construction Credits verified prior to C of O issued
- ❑ Alternate Compliance Path for limited applications
- ❑ Technical support and in-house reviews by city staff
- ❑ Online application process (eventually) – Online Scorecard

Key elements of the *Standards*:

- Regular permit application with referenced Permit Plans and a notebook style **Standards Verification Package** to Plans Examining
- Construction phase Inspections & Reviews
- Alternate Compliance Path for limited applications
- Technical support and in-house reviews by city staff
- Online Scorecard (Online application & review in process)

Six *Standards* credit categories:

Innovation & Creativity 3%

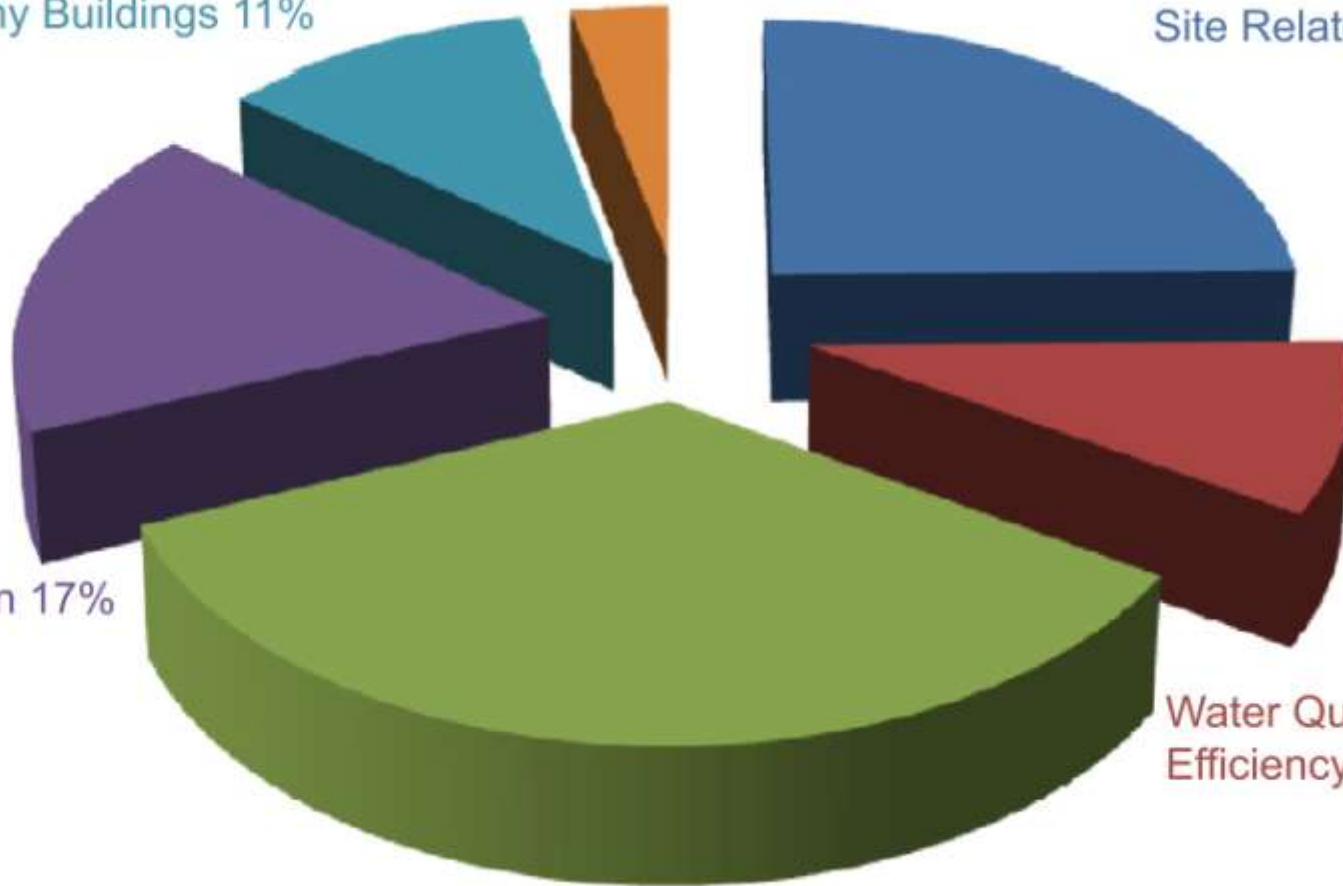
Healthy Buildings 11%

Site Related 25%

Materials
Conservation 17%

Water Quality and
Efficiency 9%

Energy Related 35%



Types of Credits

- Automatic Credits – No Documentation Required
0-14 Points (dependent on Rating System)
- Required Credits – same as LEED Pre-requisites
- Selected Credits – credits chosen by Project Team

- Enhanced points, customized or additional credits for the Standards
- Pledge Points reviewed by CCE Inspectors



The *Standards* Certification Levels



★ 1 Green Star (55-64 points)

★★ **2 Green Star (65-74 points)** LEED Silver

★★★ 3 Green Star (75-94 points)

★★★★ 4 Green Star (95-114 points)

★★★★★ 5 Green Star (115+ points)

2-Green Star+ Projects will:



- Be more energy efficient and save water
- Reduce GHG emissions – lower carbon footprint
- Clean up the Bay and restore regional watershed
- Save owners money and maintenance fees
- Put Baltimore on the map!

2 Pathways for meeting the Baltimore Green Building Requirements:

- **The *Standards Pathway*** – customized version of LEED v 3.0 to match the development and market conditions of Baltimore. No additional review fees. Integrated with city permit + inspection process.
- **The LEED Pathway** - Project achieves an actual LEED silver certification from the USGBC and submits verification of the project rating to the City.



The LEED® (Leadership in Energy and Environmental Design) Green Building Rating System is the nationally accepted benchmark for the design, construction and operation of high performance green buildings.

LEED is a registered trademark of the U.S. Green Building Council (USGBC), and is used here by permission.

THE USGBC is a 501(c)(3) non-profit that developed the LEED Green Building Rating System.

Rating System Comparison

BCGBS 2-Green Stars

- 150 total possible points
- 65 points needed (43% of total available)
- Up to 14 automatic points; 5-12 Pledge Pts, Same Required Credits
- No extra plan sets required and no additional review fees
- Certification awarded in same timeline as Certificate of Occupancy
- Customized to Baltimore City and more flexible

Leed Silver

- 110 total possible points
- 50 points needed (45% of total available)
- 0 automatic points, Pre-Reqs (Mandatory credits, no points)
- Duplication of plans and documentation + LEED fees
- Certification awarded months after building completion
- Nationally based with Regional Credits available

For LEED® Pathway Projects

Provide the following along with the Permit Application

- Applicants Cover Sheet – available from HCD website
- Proof of USGBC LEED® Registration & regis. number
- Copy of Project's LEED® Scorecard indicating Silver rating
- Copy of all LEED® Design Credit LEED Online Templates

NOTE: SVP Documentation for LEED® projects is to be submitted as a bound, 8.5 x 11 notebook of all supporting documentation. Maximum sheet size allowed is 11 x 17" folded. Eventually this will be an electronic submission.

How do the *Standards* work?

Four Step Process

- I. Getting Started and Pre-design
- II. Design and Document a green building
2-Green Star Rating or higher
- III. Permit Review Process
- IV. Construction Enforcement Process



STEP 1 - Getting Started and Pre-design:

- Decide on *Standards* Rating System
- Download the appropriate Applicants Scorecard
- Form your team & assign LEED AP
- Hold a Kick-Off Meeting with all consultants
- Identify primary sustainable goals
- Schedule a pre-development meeting(s) with the city

Applicants Scorecard used as a planning tool

Baltimore City Green Building Standards				BCGBS NEW BUILDING / MAJOR REHAB			LEED® NEW CONSTRUCTION			
APPLICANTS SCORECARD				LEED® NEW CONSTRUCTION			Scorecard for the Standards			
Name of Project:				BCGBS Anticipated rating:			2 Green Stars			
Address:				Date:						
Baltimore City GBS Credits		STDS PTS	STDS MAYBE	STDS PT Actual	Standards COMMENTARY	Notes/Cr Assignments	LEED® 2009 Reference Credit		PTS Avail	YES
Site Related Credits				Sustainable Sites						
S.R1	Chesapeake Bay Construction Protection	R		R	For BCGBS: this is an automatic credit, no documentation required.		NC SSP1	Construction Activity Pollution Prevention	R	R
S.1	City Fabric - Site Selection	1		1	For BCGBS: this is an automatic credit, no documentation required.		NC SSc1	Site Selection	1	
S.2	City Fabric - Density	5		5	For BCGBS: this is an automatic credit, no documentation required.		NC SSc2	Development Density & Community Connectivity	5	
S.3.1	City Fabric -Redevelop on a Brownfield Site	2					NC SSc3	Brownfield Redevelopment	1	
S.3.2	City Fabric - Remediate Brownfield Site	1					NA	No Comparable LEED Credit		
S.4	City Fabric - Public Transit	6		6	For BCGBS: this is an automatic credit, no documentation required.		NC SSc 4.1	Alternative Transportation- Public Transportation Access	6	
S.5.1	Smart Transportation- Encourage Bicycle Use	1					NC SSc 4.2	Alternative Transportation- Bicycle Storage and Changing	1	
S.5.2	Smart Transportation - Additional Bike Racks	1			10% of building population		NC SSc 4.2	Enhanced LEED credit for BC		
S.6.1	Smart Transportation - LEFEV Parking	1			In LEED 3 points are awarded for complying with any option. In BCGBS 1 point is awarded <i>per option</i> . S.6.1 = Encourage LEFEVs - 5% preferred parking space.		NC SSc4.3 OPT 1	Alternative Transportation- Low Emitting and Fuel- Efficient Vehicles	3	
S.6.2	Smart Transportation - Provide LEFEV fleet vehicles	1			Provide LEFEVs for 3% of bldg occupants, and preferred parking for LEFEVs		NC SSc4.3 OPT 3	Alternative Transportation- Low Emitting and Fuel- Efficient Vehicles		
S.6.3	Smart Transportation - LEFEV Vehicle Sharing	1			Encourage LEFEVs - Provide vehicle sharing program		NC SSc4.3 OPT 4	Alternative Transportation- Low Emitting and Fuel- Efficient Vehicles		
S.7	Smart Transportation - Minimize Parking	2					NC SSc4.4	Alternative Transportation- Parking Capacity	2	
	Site Development-							Site Development- Protect or		

Page 1

If you need a pre-development meeting:

410-396-3460

Front Desk for Plans Examining
Benton Building Room 101

(Fee for Meeting)

410-396-7526 (PLAN)

Department of Planning
Contact your district planner
8th Floor Benton Building

(No charge)

Both Located at:
417 E. Fayette Street
Baltimore, MD 21202



STEP 2 – Design and Document a 2-Green Star Rating (or higher) green building:

- Register on the HCD interactive website
- Continue to use & update the Applicants Scorecard
- Finalize SVP to accompany Permit Application and Permit Plan Set

Accessing the HCD Green Building webpage

Go To:

www.baltimorehousing.org



Going Green in Baltimore

In August 2007, [Council Bill 07-0602](#) mandated the City establish Green Building Standards for commercial and multi-family residential buildings over 10,000 square feet being either newly constructed or extensively modified. [View the requirements here.](#)

Before you begin...

Take a look at the [BCGBS Guidelines](#), [Instructions for Applicant Scorecard](#) and [General Requirements for Filing](#).

Register/Log In

[Click here To register](#) Registering is FREE and EASY TO DO

[Click here to login](#) if you are already registered



Going Green in Baltimore

In August 2007, [Council Bill 07-0602](#) mandated the City establish Green Building Standards for commercial and multi-family residential buildings over 10,000 square feet being either newly constructed or extensively modified. View the [requirements](#) here.

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Register/Log In

[Click here To register](#) Registering is FREE and EASY TO DO

[Click here to login](#) if you are already registered

Reference Materials

Baltimore City Green Building Standards:

[Volume 1: Regulations Manual](#)

[Volume 2: Reference Guide](#)

[LEED Silver Pathway](#)

[References & Forms](#)

BCGBS Credit Planning Documents (Applicant Scorecards)

[New Building/ Major Rehab](#)

[Education](#)

[Spec Development](#)

[Tenant Fit Out](#)

[Section 2 Project \(Systems Replacement\)](#)

Resources &Additional Information

[Applicant Coversheet](#)

[Press Release](#)

Project List Page

Once you register and log-in, the project list page comes up:

- Navigate to the Applicants Scorecards and other Downloadable Documentation
- Add Project(s)
- Navigate to Registered Project's Online Green Building Scorecard

Baltimore City Green Building Standards - Projects

[Please click here for Applicants Scorecards + Downloadable Documentation](#)

Add Project

Project Name:

Applicant Notes: 

	Project Name	Total Points	Notes	Date Create
<input type="button" value="Edit Scorecard"/>	EXAMPLE		THIS IS AN EXAMPLE FOR EDUCATIONAL PURPOSES	9/3/2010
<input type="button" value="Edit Scorecard"/>	GREEN SCHOOL			9/14/2010

Applicants Scorecard + Downloadable Documents

Also available on the HCD Green Building frontpage

Instructions











Scorecards

Volume 1

Volume 2

Cover Sheet

Appendix

INSIDE BALTIMORE HOUSING		NEWS & EVENTS		LIVE WITH US	
File Count : 10					
Description					
	Read this before you begin				
	New Building/Major Rehab				
	Education				
	Spec Development				
	Tenant Fit Out				
	Section 2 Projects (System Replacement)				
	Volume 1				
	Volume 2				
	Applicants Cover Sheet				
	Appendix				





Manage Credits

Total Points:39

 [Review & Print ScoreCard](#) 

Credits BY Category := Site - 11, Water - 2, Energy - 1, Material - 10, Health - 9, Innovation - 6								
	DateCreate	Credit No	Credit Name	Points	Credit Type	Credit Narrative Description	Reference	
Update	09/14/2010	S.R1	Chesapeake Bay Construction Protection	R	Required			Delete
Update	09/14/2010	S.R2	Phase 1 Environmental Site Assessment	R	Required			Delete
Update	09/14/2010	S.1	City Fabric - Site Selection	1	Automatic		No documentation	Delete
Update	09/14/2010	S.2	City Fabric - Density	4	Automatic		No documentation	Delete
Update	09/14/2010	S.4	City Fabric - Public Transit	4	Automatic		No documentation	Delete
Update	09/14/2010	S.10	Chesa. Bay Protection -Rainwater Control	1	Automatic		No documentation	Delete
Update	09/14/2010	S.11	Chesa. Bay Protection -Stormwater Quality	1	Automatic		No documentation	Delete
Update	09/14/2010	W.R1	City Water Supply- Basic Conservation 20%	R	Required			Delete
Update	09/14/2010	W.3.2	City Water Supply- Reduce Domestic Use - 35%	1	Selected			Delete
Update	09/14/2010	W.6.1	City Water Supply- Reduce Process Use 20%	1	Selected			Delete
Update	09/14/2010	E.R1	Energy - Basic Project Commissioning	R	Required			Delete
Update	09/14/2010	E.R2	Energy- Basic Project Conservation & Minimum Performance 10% Save	R	Required			Delete
Update	09/14/2010	E.R3	Energy - Basic Ozone Protection	R	Required			Delete
Update	09/14/2010	E.1	Energy - High Performance & Efficiency 12% to 48% efficiency New	1 to 25	Selected			Delete
Update	09/20/2010	E.3.3	Energy - Recommission Project - in 4 years	1	Pledge			Delete
Update	09/14/2010	M.R1	Materials Conservation - Basic Recycling	R	Required			Delete
Update	09/14/2010	M.1.1	Materials Conservation - Re-Use Buildings - 55%	1	Selected			Delete
Update	09/14/2010	M.1.2	Materials Conservation - Re-Use Buildings - 75%	2	Selected			Delete
Update	09/14/2010	M.1.3	Materials Conservation - Re-Use Buildings - 95%	2	Selected			Delete
Update	09/14/2010	M.1.4	Materials Conservation - Re-Use Interior - 50%	2	Selected			Delete

Key:

-  Required
-  Automatic
-  Selected
-  Pledge Point

Add Selected Credits

[LogOut](#)

Online Baltimore City Green Building Standards Scordcard Credit Selection

Project Name : GREEN SCHOOL

Company Name : TERRALOGOS

Project Type:

BCGBS EDUCATION



Credit Category:

Material Conservation

Credit:

M.8 : Materials Recycling - Post Occupancy Recycling Program--> Point-1

[Add This Credit](#)

Baltimore City Standard:

Credit Code:M.8

Standards Points:1

Credit Name: Materials Recycling - Post Occupancy
Recycling Program

LEED 2009 Standard:

Credit Code:N/A

LEED Points:

Credit Name: No Comprable LEED Credit

Total Points:39



Review & Print ScoreCard



Credits BY Category := Site - 11, Water - 2, Energy - 1, Material - 10, Health - 9, Innovation - 6

	DateCreate	Credit No	Credit Name	Points	Credit Type	Credit Narrative Description	Reference	
Update	09/14/2010	S.R1	Chesapeake Bay Construction Protection	R	Required			Delete

Credit Summary Page

INSIDE BALTIMORE HOUSING

NEWS & EVENTS

LIVE WITH US

DO BUSINESS

[Home](#) > [Code Enforcement](#) Greeting Building Credit Score Worksheet

Green Building Credit Score Details

CREDIT SUMMARY

Project Name : GREEN SCHOOL

Company Name : TERRALOGOS

[Previous Screen](#)

Credit No & Name: S.10.1-Ches Bay Protection - Rainwater Control on Site

Credit Narrative: 

[Update](#)

Reference:  (Select One)

[Add Reference](#)

Standards Verification Package

- Applicants Cover Sheet
- Complete Online Green Building Scorecard
- Permit set with Standards references
- Supporting Documentation (Standards Template Forms + Credit Narratives)



SVP: Applicants Coversheet

Applicants Coversheet - Standards Verification Package

Project Name:		Contact Person:	
Project Address:		Permit No.:	
		Date:	
		Telephone:	
		Fax:	
		Cell (Optional):	
Designer of Record:		Other:	
Developer or Owner		BCGBS Anticipated Rating:	
Name:		BCGBS Anticipated Program:	
		Total Credit Points estimated:	
Firm:		Zoning District:	
		Permit Application date:	
Title:		Estimated Start Construction	
Address:		Est Time for construction	
		Est Date of Occupancy	
		Project Type: [describe]	
Phone:		Size of the project:	
Fax:		No. Stories	
Email:		Lot area (Gross sf):	
LEED Coordinator:		Commissioning Agent	
Name:		Name:	

SVP: Online Green Building Scorecard

Green Building Score Card

Company Name : TERRALOGOS

Project : GREEN SCHOOL

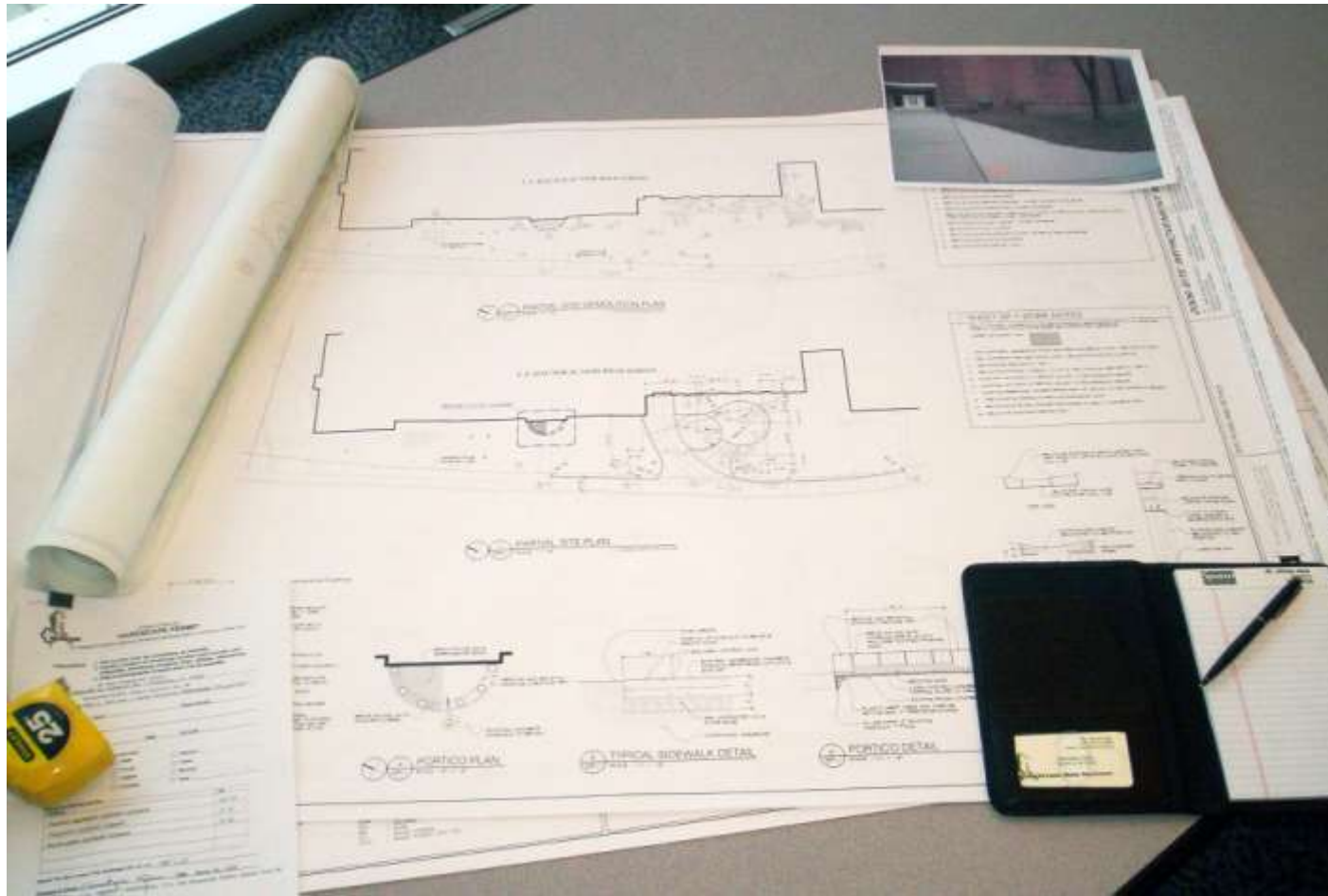
Total Score : 56

Page 1 of 6

Credit No	Credit Name	Points	Options (if any)	Credit Narrative Description	References	Reference Detail	Applicats sign off
<u>Site Related</u>							
S.R1	Chesapeake Bay Construction Protection	R					
S.R2	Phase 1 Environmental Site Assessment	R					
S.1	City Fabric - Site Selection	1		No documentation			
S.2	City Fabric - Density	4		No documentation			
S.4	City Fabric - Public Transit	4		No documentation			
S.7	Smart Transportation - Minimize Parking	2					
S.10	Chesa. Bay Protection -Rainwater Control	1		No documentation			
S.11	Chesa. Bay Protection -Stormwater Quality	1		No documentation			
S.14.2	Cool City - 50% shading through trees option	2					
S.15.2	Cool City - 50% Vegetative Roof	2					
S.16	Dark Skies- Nighttime Lighting Reduction	1					
Sub Total :	Site Related Credits	18					

SVP: Permit Set with *Standards* References

Provided by Design/Construction Team



SVP: Standards Template Forms

W.R.1. City Water Supply - Basic Conservation - 20%
W.3. City Water Supply - Reduce Domestic Use

Project Name:				Date:			
	FTE	Visitors	Students				
Male							
Female							
Total	0	0	0				

Flow Fixture Base Line Case- Daily							
Fixture Type	Flow Rate (GPM)	Duration (minutes)	Total Flow	Daily Uses Per Person			Total Water Usage
				FTE	Visitor	Student	
Conventional Lavator			0				0
Conventional Lavatory - Basin			0				0
Conventional Shower			0				0
Kitchen Sink			0				0
Janitor Sink			0				0
Janitor Sink - Mop Ba			0				0
Flow Fixture Total							0

Flush Fixture Base Line Case- Daily								
Fixture Type	Flow Rate (GPF)	FTE Male	FTE Female	Visitor Male	Visitor Female	Student Male	Student Female	Total Water Usage
Conventional Urinal								0
Flow Fixture Total								0

Flow Fixture Design Line Case- Daily							
Fixture Type	Flow Rate (GPM)	Duration (minutes)	Total Flow	Daily Uses Per Person			Total Water Usage
				FTE	Visitor	Student	
Conventional Lavator			0				0

Sample *Standards*
 Water Credit
 Template

Applicant downloads
 the form from the
 Credit Summary
 page, fills in
 electronically, prints
 and included in the
SVP

SVP: Credit Narrative Sample

Credit Narrative Form			
Project Name:	Great School Addition	Permit No.:	XP101506
BCGBS Coordinator:	LEED Solutions, Inc	Date:	8/29/2010
Address:	100 N. Calvert St Baltimore, MD		
Phone:	410.443.1122		
Email:	bobb@gmail.com		

Only for some credits

Green Star Rating:	2 Green Stars (anticipated 68 points)
BCGBS Program:	EDUCATION
Credit Name:	M.5.4 Baltimore City Sourced Materials
Credit Summary The project team will do the following to meet the criteria of the credit:	The project is a 15,000 GSF, two story addition to a specialty elementary school, of steel frame and brick construction. The project will source specialty light fixtures and 80% of the built in case goods from companies located in Baltimore City. For light fixtures, the fixtures will be assembled and delivered to the site by ABC Electrical, 100 N. Calvert Street, 21205; and the case goods, including elements such as the reception desk, library shelves and built in workstations located in each classroom will
Documents:	See Reference Posting in Online Credit Scorecard Worksheet

STEP 3 - Permit Review Process:

- **File** permit application in One Stop Shop
- **Plans Examining Review**
(Regular process)
- **Issuance of Building Permit**



STEP 4 - Construction Code Enforcement:

- **Inspections, Reviews & Super-Commissioning**
- **Issue** Certificate of Occupancy
- **Award** BCGBS rating and certificate



Types of Enforcement Activities:

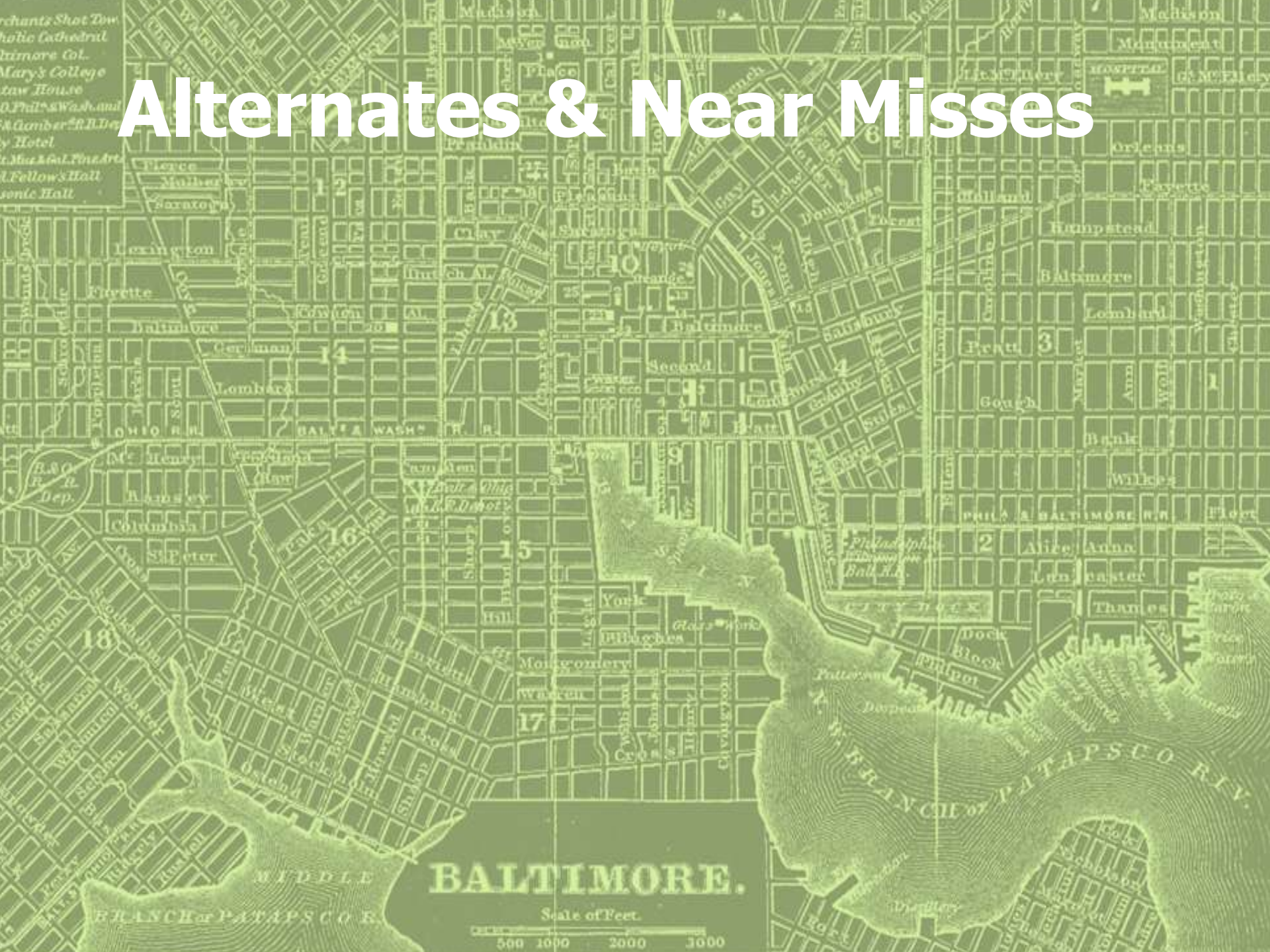
- On-site Inspections
- Off-site Document Review
- On-site Super-Commissioning
- On going Pledge Point Enforcement





Celebrate SUCCESS !!

Alternates & Near Misses



Alternate Compliance Paths

Multi-family Dwellings or Mixed Use Multi-family over 4 Stories:

LEED® for Homes & Energy Star rating and modeling

- 5% of units modeled
 - Remcheck, alternative computer simulations allowed
 - Common areas modeled as one space

60 points total, All required credits

- Pledge Points, Innovation Points

Waiver Process – limited for specific points

What happens if we miss (by a point or two)?

For the *Standards* Pathway:

- No Certificate of Occupancy
- Pledge Points, Innovation Points
- Revisit credits and re-submittal (Fees apply)
- Citations for not achieving Pledge Points



Also Waiver Process and Alternative Compliance Paths (ACPs) for certain project types.

What happens if we miss (by a point or two)?

For LEED Pathway projects:

- Citation until 2-Star Rating or its equivalent is achieved.
- Option to submit under the BCGBS and use Pledge Points (Fees apply)



Where are we now?

- Ongoing training of inspectors
- 6 month window for transition projects
- Case by Case reviews and HCD Flexibility
- Transition period
 - July 2007 – law passed – ramped in regulations
 - Projects in pipeline prior and during interim period



What is available on our website?

www.terralogos.com

- Direct Link to HCD Online Scorecard website
- An introduction to the Baltimore City Green Building Standards
- Step-by Step Guideline to completing a *Standards* project
- A guide “How to use the Applicants Scorecard”
- Calendar of Events
- AND MORE, check us out for regular updates!



**If you have questions-
We have answers . . .**

TerraLogos
eco architecture, pc

410.276.8519
info@terralogos.com
www.terralogos.com



**Available for LEED and *Standards* consulting
during Design and Construction.
*PLEASE CONTACT US!***