

# Massachusetts Port Authority Sustainable Design Standards and Guidelines



**AAPA Annual Convention  
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# Overview of Massachusetts Port Authority

- Independent State Authority
- Governor appoints Board
- Self-financing (i.e. no tax revenue)
- Primary Massport facilities:
  - Logan International Airport
  - Port of Boston
  - Tobin Bridge
  - Major waterfront land holdings





# Massport's Maritime Operations



Conley Container Terminal



Black Falcon Cruise Terminal



Boston Autoport



Boston Fish Pier



Massport Marine Terminal



# Massachusetts Port Authority's Strategic Vision for the Port of Boston

- Increase the amount of foreign and domestic water-borne commerce (primarily containers) through the Port of Boston
- Develop facilities and related access infrastructure to support growth in key business lines
- Develop other Maritime properties to support core businesses and provide financial return to make capital investments in port facilities
- Operate in a fiscally, environmentally and socially sustainable manner



# Massport Sustainability Initiatives and Programs

- Corporate Environmental Management Policy
- Authority-wide sustainability strategy in development
- Baseline inventory of Massport's port-related emissions underway
- Conley Terminal EMS and ISO 14001 Certification since 2003
- Shore power at Fish Pier, tug and cement berths
- Extensive Recycling Programs – including seafood processing waste and used fishing gear
- Incorporate “green” lease terms in new agreements
- Extensive public parks and green spaces managed by Maritime Dept.
- Voluntary compliance with “LEED Plus” green building requirements
- Redevelopment of underutilized and brownfield properties
- Longstanding social responsibility and community involvement programs
- **NEW! Sustainable Design Standards and Guidelines (SDSG)**



# The SDSG is...

- A LEED-like certification program that includes:
  - performance standards and guidelines for sustainable design
  - an implementation process
  - a documentation system to track progress and determine certification level
- Required to be used by all architects, engineers and planners to consistently integrate sustainable techniques and practices into all of Massport's capital projects
- Intended to provide innovative guidance for sustainable design that goes beyond existing programs for buildings (i.e. LEED), specifically to include non-building projects that are typical for the port industry.



# SDSG Overview, cont'd

- Developed by an interdepartmental Sustainability Working Group
- Tailored to Massport's needs, but transferrable to other ports
- Table-top exercises and implementation on current projects demonstrate that the SDSG is practical, implementable and will yield measurable benefits
- Currently being implemented on 6 port projects:
  - Coastal Oil Property Acquisition and Remediation
  - Rehab of Existing Cranes at Conley Container Terminal
  - Conley Heavy Duty Pavement Rehabilitation
  - Additional Conley Dock Cranes
  - Refrigerated Container Racks at Conley
  - Tractor Replacement



# SDSG Framework

- 7 categories of performance standards
- 49 performance standards in total
- All Capital Projects must achieve a minimum rating of 'Certified'
- Rating System:

Level	% of applicable points
Certified	40-55%
Silver	56-70%
Gold	71-85%
Platinum	86-100%





# SDSG Categories

1. General
2. Project Site Design
3. Project Materials
4. Energy Management and Efficiency
5. Air Emissions
6. Water Management, Quality, and Efficiency
7. Indoor Air Quality & Occupant Comfort



Each Category has 3-10 performance standards...



# SDSG Performance Standards

## *Each performance standard addresses:*

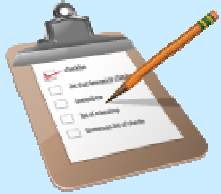
- ✓ Intent
- ✓ Benefits
- ✓ Required for Credit
- ✓ Additional Credits
- ✓ Required Documentation
- ✓ Strategies

*Example for Material Durability, 1 of 10 performance standards for Project Materials category:*

- Material Durability
  - Intent
    - Maximize durability of materials to minimize maintenance and replacement and maximize material life
  - Benefits
    - Reduced life-cycle-costs
    - Reduced solid waste over the project lifecycle
    - Reduced operational disruptions due to maintenance and replacement
  - Required for Credit
    - Evaluate and prioritize materials based on lifespan and lifecycle maintenance costs
    - Develop life-cycle-cost analysis for project materials
  - Required Documentation
    - Life-cycle-cost analysis for project
    - List of materials evaluated based on lifespan and lifecycle maintenance costs. Note materials chosen for incorporation into the project. Provide justification for highly rated materials not chosen for the project.
  - Strategies
    - Avoid products that require frequent replacement or maintenance
    - Prioritize materials that can be recycled
    - Evaluate state-of-the-art materials and best practices
    - Adjust standard capital project budget estimating norms to account for higher material first costs, if applicable.



# SDSG Implementation



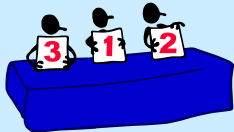
## 1. Determine sustainability goals

- What level rating can the project achieve?
- Which performance standards will be included in the design?
- Are there any additional points that could be achieved with an **Innovation Worksheet**?



## 2. Keep on target

- Fill out the **Rating Sheet** at the beginning of the design process
- Revise the rating sheet and innovation worksheets at 30%, 60% and 90% design stages



## 3. Massport designates final rating

- Provide documentation for approval



# SDSG Implementation – Rating Sheet

Massachusetts Port Authority Sustainable Design Standards and Guidelines Rating Checklist				
Project Number and Title				
Project Type				
Square Footage				
Summary Description and Scope				
General	Applicable	Achieved		Summary (Short summary of achievement and/or strategy)
	(Must)	(Must)	(Must)	
General	Yes	No	No	
Project Definition				
Project Sustainability Progress Meetings				
Design Documents and Construction Submittals				
Systems Commissioning				
Waste Reduction and Recycling Infrastructure				
Design for Deconstruction				
Operations and Maintenance Program				
Professional Certification				
Social Responsibility & Community Involvement				
Public Education				
Project Site Design				
Airfield Design & Layout				
Airport Ramp Infrastructure				
Roadway Layout and Design				
Access to Public Transportation				
Parking				
Site Selection				
Site Protection & Restoration - non-Airfield				
Future Land Use				
Vegetation & Wildlife Management				
Reg II Management				
Project Materials				
Heat Island Effect - Roof				
Heat Island Effect - Non-Roof				
Material Durability				
Flexible Building Re-Use				
Material Re-Use				
Recycled Content				
Construction Waste Management				
Regional Materials				
Rapidly Renewable Materials				
Certified Wood				
Energy Management and Efficiency				
Energy Efficiency				
Interior & Exterior Lighting				
Alternative & Renewable Energy				
Air Emissions				
Infrastructure to Encourage Walking & Biking				
Alternative Fuel Vehicles				
Refrigerant Management				
Greenhouse Gas Impact Evaluation and Mitigation				
Air Toxics				
Water Management, Quality, and Efficiency				
Water Management & Efficiency				
Stormwater Treatment				
Landscaping				
Stormwater/Wastewater Re-use				
Impervious Surfaces				
Indoor Air Quality & Occupant Comfort				
Indoor Air Quality				
Ventilation				
Thermal Comfort				
Lighting Control				
Daylighting & Views				
Low-Emitting Materials				
Total	0	0	0	0
Rating Calculation:		%		

- Mark whether each performance standard applies to the project
- Mark performance standards included in the design as “achieved”
- Calculate projected rating
- Revise at 30%, 60% and 90% stages or if project changes
- Use Rating Sheet to stay on target for desired rating



# SDSG Implementation – Rating Sheet

Massachusetts Port Authority  
Sustainable Design Standards and Guidelines  
Rating Checklist

Project Number and Title			
Project Type			
Square Footage			
Summary Description and Scope			

	Applicable			Achieved (Insert number of credits achieved within project design)	Summary (Short summary of achievement and/or strategy)
	Yes	Maybe	No		
<b>General</b>					
Project Definition					
Project Sustainability Progress Meetings					
Design Documents and Construction Submittals					
Systems Commissioning					
Waste Reduction and Recycling Infrastructure					
Design for Deconstruction					
Operations and Maintenance Program					
Professional Certification					
Model Responsibility & Community Involvement					
Public Education					
<b>Project Site Design</b>					
Artificial Design & Layout					
Airport Ramp Infrastructure					
Roadway Layout and Design					
Access to Public Transportation					
Parking					
Site Selection					
Site Protection & Restoration - non-Airfield					
Future Land Use					
Vegetation & Wildlife Management					
Soil Management					
<b>Project Materials</b>					
Heat Island Effect - Roof					
Heat Island Effect - Non-Roof					
Material Durability					
Flexible Building Re-Use					
Material Use & Re-Use					
Recycled Content					
Construction Waste Management					
Regional Materials					
Rapidly Renewable Materials					
Certified Wood					
<b>Energy Management and Efficiency</b>					
Energy Efficiency					

- Mark whether each performance standard applies to the project
- Mark performance standards included in the design as “achieved”
- **Calculate projected rating**  
Revise at 30%, 60% and 90% stages or if project changes  
Rating Sheet to stay on track for desired rating

Level	% of applicable points
Certified	40-55%
Silver	56-70%
Gold	71-85%
Platinum	86-100%





# SDSG Implementation – Innovation Worksheets

Massachusetts Port Authority  
Sustainable Design Standards and Guidelines  
Rating Checklist

Project Number and Title				
Project Type				
Square Footage				
Summary Description and Scope				

	Applicable (max 10)		Achieved (max number of credits achieved with project design)		Summary (Short summary of achievement and/or strategy)
	Yes	No	Yes	No	
<b>General</b>					
Project Definition					
Project Sustainability Progress Meetings					
Design Documents and Construction Submittals					
Systems Commissioning					
Waste Reduction and Recycling Infrastructure					
Design for Deconstruction					
Operations and Maintenance Program					
Professional Certification					
Social Responsibility & Community Involvement					
Public Education					
<b>Project Site Design</b>					
Artificial Design & Layout					
Airport Ramp Infrastructure					
Roadway Layout and Design					
Access to Public Transportation					
Parking					
Site Selection					
Site Protection & Restoration - non-Airfield					
Future Land Use					
Vegetation & Wildlife Management					
Prep Management					
<b>Project Materials</b>					
Heat Island Effect - Roof					
Heat Island Effect - Non-Roof					
Material Durability					
Flexible Building Re-Use					
Material Re-Use & Re-Use					
Recycled Content					
Construction Waste Management					
Regional Materials					
Rapidly Renewable Materials					
Certified Wood					
<b>Energy Management and Efficiency</b>					
Energy Efficiency					
Interior & Exterior Lighting					
Alternative & Renewable Energy					
<b>Air Emissions</b>					
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<b>Water Management, Quality, and Efficiency</b>					
Water Management & Efficiency					
Stormwater Treatment					
Landscaping					
Stormwater/Wastewater Re-use					
Impervious Surfaces					
<b>Indoor Air Quality &amp; Occupant Comfort</b>					
Indoor Air Quality					
Ventilation					
Thermal Comfort					
Lighting Control					
Daylighting & Views					
Low-Emitting Materials					
Total	0	0	0	0	
Rating Calculation:					66

- Purpose is to encourage “thinking outside the box”
- Three ways to use the innovation worksheets:
  1. Innovation not included in SDSG
  2. Exceeding requirements
  3. Meeting intent without meeting exact requirements



# In Conclusion ...

## Massport's new Sustainable Design Standards and Guidelines will:

1. Maximize the environmental, social and economic benefits of Massport's capital projects;
2. Allow measurement of sustainability performance so that progress can be communicated, knowledge transferred and gaps identified; and
3. Encourage the development and implementation of cutting-edge technologies.

