Building Statistics

September 17

2012

Name | Cheuk Tsang
Advisor | Dr. Stephen Treado

Name of Building | American Art Museum
Location | New York, NY
Date | 08/31/2012

Building Statistics

General Building Data

Building name:	American Art Museum	
Location and Site:	Meatpacking District, New York, NY	
Size of project:	195,000 sq. ft.	
Number of Stories Above Grade/ Total Levels:	9 levels (cellar mezzanine and cellar level underground)	
Primary Project Team:	Owner representative:	Withheld by the owner
	Architect:	Cooper, Robertson & Partners Renzo Piano Building Workshop
	MEP consultant:	Jaros, Baum & Bolles
	Structural consultant:	Robert Silman Associates, P.C.
	Construction Manager:	Turner Construction Company

Date of Construction:	Start in February 2012 End in late 2014
Actual cost information:	~$270M
Delivery method:	Design-bid-build

Architecture

Architecture:

The need and form of this Museum that the architect, Renzo Piano, studied are to provide a space "for the art collections, exhibitions, and education and performing arts programs". Architect Renze Piano designed with the following components:

Architectural form:

The architectural form of this museum is asymmetrical, which reflects the surrounding industrial buildings and overhead railway. This architectural form also creates outdoor areas on multiple floors for exhibits and cafes.

Cantilevered entrance:

It provides a public space with a shelter and especially attracts the people from a New York public park, which is located 30 ft. above street level.

Figure 1 Courtesy of the owner

Indoor and outdoor galleries:

In this museum, there will be the largest column-free museum gallery in New York City. Also, there will be a large area of indoor and outdoor galleries on the rooftops facing the New York public park.

National model code/s:

International Building Code (IBC) 2007
Uniform Building Code (UBC)

Zoning:

District(s): M1-5 - light manufacturing district (high performance)

Historical Requirements of Building or Historical District where Built:

From Geological Technology Analysis, the main concern is that the construction site of this museum is located on a man-made filled land. The land is an extension of the shoreline of the Hudson River. The analysis states that it may interrupt the foundation construction due to old timber structures or other obstructions.

Building Enclosure

Building façade:

There are 10 different exterior wall types. Most of the exterior walls are pre-cast concrete system with CMU and stud wall with steel plate rain screen cladding system. The curtain wall system is built with 8 different glazing systems.

Roofing:

There are several different roofing types. Most of them, such as terrace roofs, are covered with reinforced concrete wearing surfaces. Over the mechanical space in the north sided, the roof is integrally footed pre-cast concrete pavers. The green roof is topped with 4" extensive growing soil.

Shading Devices:

There are three types of shading devices, which are interior glare/solar control shade, interior diffusing shade and interior blackout shade. Most of the shading devices are motorized. And, the manually controlled shading devices are interior glare/solar control shades in the south of 5^{th} floor and all sides of 4^{th} floor.

Sustainability Features

This project will achieve minimum Gold Certification with the aspects of LEED for New Construction 2009. The main sustainability features are:

Indoor Air Quality:

As the carpet use, the carpets are required to be labeled with the "Green Label Plus". And, the paint of the project will be anti-corrosive and anti-rust paints.

Material Use:

The project is going to use LEED focus materials, low-emitting furniture and furnishings, and rapidly renewable resources, etc. And, the roofing material is also included the minimum Solar Reflectance Index listed in the LEED Requirement Summary, Section 018115.

Energy Use:

All of the fluorescent lighting features will be required with low mercury.

LEED Training Program

The project provides an environmental training for the workers on the project site. The topics in the training program are such as the LEED requirements of the project and the construction waste management.

LEED for New Construction Version 3.0 Summary Scorecard

December 6, 2011

The Whitney Museum at Gansevoort

110	52	13	8	37	Total Project Score

Certified 40 points
Silver 50 points
Gold 60 points
Platinum 80 points

Sustainable Sites — 26 Possible Points

Available Pts	Likely	Possible	Less Likely	Not Viable		
Av	L	P	LL	NV		
Y					Prereq 1	Construction Activity Pollution Prevention
1	1				SS 1	Site Selection
5	5				SS 2	Development Density & Community Connectivity
1	1				SS 3	Brownfield Redevelopment
6	6				SS 4.1	Alternative Transportation - Public Transportation
1	1				SS 4.2	Alternative Transportation - Bicycle and Changing Rooms
3	3				SS 4.3	Alternative Transportation - Fuel Efficient Vehicles
2	2				SS 4.4	Alternative Transportation - Parking Capacity
1			1		SS 5.1	Site Development - Protect or Restore Habitat
1		1			SS 5.2	Site Development- Maximize Open Space
1	1				SS 6.1	Stormwater Design, Quantity Control
1				1	SS 6.2	Stormwater Design, Quality Control
1	1				SS 7.1	Heat Island Effect, Non Roof
1				1	SS 7.2	Heat Island Effect, Roof
1			1		SS 8	Light Pollution Reduction

Water Efficiency — 10 Possible Points

Available Pts	Likely	Possible	Less Likely	Not Viable		
Av	L	P	LL	NV		
Y					WEp1	Water - Use Reduction - (20%)
4		4			WE 1.1-1.2	Water Efficient Landscaping - (50% and 100%)
2				2	WE 2	Innovative Wastewater Technologies - (50%)
4	3			1	WE 3	Water Use Reduction - (30%, 35%, 40%)

EA Totals — 35 Possible Points

Available Pts	Likely	Possible	Less Likely	Not Viable		
Av	L	P	LL	NV		
Y					Prereq 1	Fundamental Commissioning
Y					Prereq 2	Minimum Energy Performance
Y					Prereq 3	Fundamental Refrigerant Management
19	2	1	1	15	EA 1	Optimize Energy Performance
7			1	6	EA 2	On Site Renewable Energy
2	2				EA 3	Enhanced Commissioning
2	2				EA 4	Enhanced Refrigerant Management
3	1	2			EA 5	Measurement & Verification
2	2				EA 6	Green Power

Materials & Resources — 14 Possible Points

Available Pts	Likely	Possible	Less Likely	Not Viable		
Av	L	P	LL	NV		
Y					Prereq 1	Storage & Collection of Recyclables
3				3	MR 1.1	Building Reuse - Keep Existing Walls, Floors & Roof
1				1	MR 1.2	Building Reuse - Keep Iterior Non-Structural Elements
2	2				MR 2	Construction Waste Management - (50%, 75%)
2				2	MR 3	Materials Reuse - Reuse building materials and products
2	1	1			MR 4	Recycled Content - (10%, 20%)
2		1	1		MR 5	Regional Materials - (10%, 20%)
1				1	MR 6	Rapidly Renewable Materials - (2.5%)
1			1		MR 7	Certified Wood - (50%)

Indoor Environmental Quality — 15 Possible Points

Available Pts	Likely	Possible	Less Likely	Not Viable		
Av	L	P	LL	NV		
Y					Prereq 1	Minimum IAQ Performance
Y					Prereq 2	Environmental Tobacco Smoke (ETS) Control
1	1				EQ 1	Outdoor Air Delivery Monitoring
1		1			EQ 2	Increased Ventilation - (30%)
1	1				EQ 3.1	Construction IAQ Management Plan - During Construction
1		1			EQ 3.2	Construction IAQ Management Plan - Before Occupancy
1	1				EQ 4.1	Low Emitting Materials - Adhesives & Sealants
1	1				EQ 4.2	Low Emitting Materials - Paints & Coatings
1	1				EQ 4.3	Low Emitting Materials - Flooring Systems
1	1				EQ 4.4	Low Emitting Materials - Composite Wood
1		1			EQ 5	Indoor Chemical & Pollutant Source Control
1	1				EQ 6.1	Controllability of Systems Lighting
1				1	EQ 6.2	Controllability of Systems Thermal Comfort
1	1				EQ 7.1	Thermal Comfort Design
1	1				EQ 7.2	Thermal Comfort Verification
1				1	EQ 8.1	Daylight & Views - Daylight for 75% Spaces
1				1	EQ 8.2	Daylight & Views - Views for 90% of Spaces

Innovation & Design Process — 6 Possible Points

6	6					
Av	L	P	LL	NV		
						Maximum of 3 Exemplary Performance
1	1				ID 1.1	Low Mercury Lighting
1	1				ID 1.2	Green Housekeeping Plan
1	1				ID 1.3	Green Building Education
1	1				ID 1.4	Exemplary Performance, Mass Transit
1	1				ID 1.5	Emissions Reduction Reporting
1	1				ID 2	LEED Accredited Professional

Regional Priorities — 4 Possible Points

4	1		2	1		
Av	L	P	LL	NV		
1	1				RPc1	SSc4.1: Alternative Transportation - Public Transportation
1			1		RPc2	SSc5.1: Site Development - Protect or Restore Habitat
1				1	Rpc3	SSc6.2: Stormwater Design, Quality Control
1				1	Rpc4	EAc1: Optimize Energy Performance
1				1	Rpc5	EAc1: Optimize Energy Performance
1			1	1	Rpc6	EAc2: On Site Renewable Energy