

**Sustainable Design Guidelines Reference Manual**  
**World Trade Center Redevelopment Projects**  
LMDC, PANYNJ, and NYSERDA  
March 25, 2005

**EXECUTIVE SUMMARY**

The World Trade Center Redevelopment will include a memorial, a transportation hub, a hotel, museum cultural facilities and spaces for the performing arts, as well as office towers, and a retail center. With 10 million square feet of office space planned, and up to 1,000,000 square feet of retail space, it will be a workplace for tens of thousands of people. The concept of design excellence envisions a community that provides a safe, user-friendly and attractive atmosphere for workers, residents, visitors and tourists. By embodying the ideals of sustainable design, the Redevelopment can be an exemplar for large-scale, mixed development in the North-East and across the United States.

To this end, the agencies with an interest in the physical redevelopment of the World Trade Center, namely the Port Authority of New York and New Jersey (PANYNJ), the Lower Manhattan Development Corporation (LMDC) and New York State Energy Research Development Authority (NYSERDA), have separately and collectively developed a series of Sustainable Guidelines (Guidelines) intended to address all major components of the site. These include the Transportation Hub, the Commercial Office Buildings, the Tenant and Retail spaces, the World Trade Center Memorial, Museum Complex, the Performing Arts Complex, and the Site itself. To support the World Trade Center Redevelopment projects, a World Trade Center Sustainable Guidelines *Reference Manual (Reference Manual)*, the subject of this document, has been developed. While this single document cannot address all of the specific building-type issues in detail, the *Reference Manual* provides information and support for the majority of sustainable concerns relative to environmental/sustainable planning, construction and operation of this urban-scale development.

The *Reference Manual* is a supplement to the already published Guidelines. It has been conceived as an essential tool to facilitate all design teams undertaking sustainable design projects at the site. The objective of the *Reference Manual* is to clarify the purpose of the Guidelines by providing a clear context for each subject, a brief discussion of the relevant issues, and clarification of the various means by which the proposed environmental goals can be achieved.

The fundamental characteristics of the various Guidelines and the *Reference Manual* have been developed to respond to the urban scale, complexity and extended time frame of the entire site development, as well as to address the fact that many of the projects cannot be defined simply as a 'Building.' Further provisions support 'whole systems thinking' and the confirmation of an integrated plan for the maintenance and enhancement of sustainable performance over time.

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These characteristics are summarized as follows:

- **Urban Scale and Community:** A number of unique Guidelines have been developed to address connectivity to adjoining neighborhoods, green infrastructure, transportation and pedestrian movement.
- **Implementation and Process:** The PANYNJ and/or LMDC will review the work of the design teams in order to provide guidance assistance and a determination of compliance with the Guidelines. Rather than a single review at project completion, a sequential review will occur at the traditional project phases: (SD, DD, CD and CA) to monitor progress, and determine if the design team is on track to incorporate solutions to meet the sustainable guidelines for their project.
- **Whole System Design:** In addition to quantifiable performance attributes required by the Guidelines, overall 'Plans' are included in narrative form, which demonstrate understanding of both context and sustainable opportunities that exist beyond the traditional boundaries of site.
- **Scalability:** The applicable Guidelines are assignable to a full range of projects down to small scale, non-building projects on site.
- **Exemplar Tenant Space:** Retail and Commercial: The Exemplar is the construction of a 5,000 s.f. high performance tenant space fully integrating core and shell sustainable potentials within a prototypical tenant fit-out for each major project. The exemplar provides an essential tool for the advocacy of measurable high performance tenant design, as well as a clear statement of the preferred 'Landlord Standard' fit-out supported by the quantified energy savings, environmental benefits and direction to NYC/NYS/NYSERDA grants and support initiatives. (The energy savings notably will go directly to the tenant due to the provision of 'end use' metering as a WTC Redevelopment Standard.)

Together, these characteristics project an extended framework of sustainability and a new model for urban-scale development.

This *Reference Manual* (in conjunction with the applicable LEED® Reference Manual) is intended to serve as the primary reference source for designers working to implement the Guidelines on a wide range of projects at the World Trade Center site. These projects include the Commercial Office and Retail Redevelopment, the Transportation Hub, the WTC Memorial and the Cultural Facilities. While this document elaborates on all of the sustainable goals as currently envisioned, future supplements to the *Reference Manual* are anticipated in order to capture the maximum sustainable benefit as programs are advanced and the totality of the redevelopment is clarified. In addition, the fast pace of change in sustainable methods and technology will be addressed by an 'update review' every two years.

The *Reference Manual* utilizes documents that have been developed by a number of agencies to promote sustainable design, specifically in New York State and City, as well as nationally. These reference standards include New York State's Executive Order 111 (EO-111), the New York State Green Building Tax Credit (NYSGBTC) and the US Green Building Council's LEED v2.1 Rating System. In addition, the *Reference Manual* attempts to reconcile conflicts between the various agency requirements, thereby providing a path for the resolution of these issues. As noted, the *Reference Manual* goes beyond these baseline documents by introducing language and criteria in support of the unique set of large-scale

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sustainable qualities that appear under the title of “Urban Environmental Quality” (UEQ), as well as introducing issues that are specific to this locale and high-density urban settings.

### **Structure of Reference Guidelines**

Each Guideline is organized into several basic parts with sub-headings:

**Related Guidelines:** Lists references to other guidelines which will influence the implementation of the guideline and chapters by providing additional relevant reference materials.

**Potential LEED™ 2.1 Credit:** Indicates where compliance with the appropriate set of WTC Sustainable Design Guidelines will also satisfy the requirements necessary for these related LEED Credits.

**Introduction/Context:** Introduces guideline goals and issues, including historical data of interest, and provides a context for later, more specific development of these issues.

**Relevant Issues:** The three most critical guideline impact areas, **Ecological, Economic and Neighborhood Impacts** are described for the World Trade Center Site.

**Methodology:** The two critical components of a sustainable design project are discussed: The environmental/sustainable and human-centered **Design Strategies** that may be used to inform the design process, and the technical **Means and Methods** by which they may be achieved. While a roadmap is provided, this is by no means the only methodology for complying with the requirements. Design teams are encouraged to introduce innovative paths to achieving higher levels of performance in their projects, and a greater degree of sustainability.

**Reference:** The reference section includes **Case Studies, Definitions, Standards** and an **Annotated Bibliography**. (These are provided for educational purposes and are not intended as specific directives.)

### **Master Certification / Master Checklist / Submittal Templates:**

These are the facilitating documents for each submission to the PANYNJ and/or LMDC.

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