CITY OF TRENTON

SUSTAINABLE DESIGN GUIDELINES
10/24/2005

These sustainable guidelines are meant to function as "guiding principles" for all new development. As such, it will be the responsibility of each redeveloper to incorporate as many of these elements into their site plan, as practical, that will be submitted to the City of Trenton's Planning Board. Developers are strongly encouraged to submit concept plans to the Division of Planning outlining all sustainable design elements prior to formal site plan submission. The Board, in consultation with the City's consulting engineers, will have the jurisdiction to determine if the "spirit" of these guidelines are adequately addressed. As part of the site plan submission, the redeveloper will be responsible to submit the attached rating sheet (appendix A) along with a narrative describing how the sustainable guidelines are met.

These guidelines were called out of the report "Trenton Sustainable Brownfields Development Project," which was completed in April 2004. Redevelopers are encouraged to obtain a copy of this report for review and reference. Call (609)989-3291 to obtain a copy of the "Trenton Sustainable Brownfields Development Project" report on CD.

When doing development in this area, redevelopers should, to the extent possible incorporate the following sustainable design elements:

Sustainable Architectural Design Concepts and Elements:

Seasonal Design Objectives:

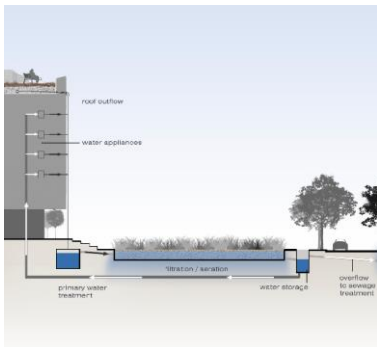| Summer	Winter
Encourage light breeze	**Protect from winds**
Provide shaded routes	**Increase solar access**
Protect from rain	**Protect from rain & snow**

The following guidelines will maximize comfort while minimizing energy costs:

- **Orient the majority of glazing to optimize daylighting potential and heat gain during winter season**
- **Orient thermal mass (materials that absorb, store, and conduct heat) and insulation to take advantage of southern exposure while blocking north winds**
- **Use roof-top gardens to reduce solar gain and insulate in winter**

The following guidelines will minimize the effects of pollution:
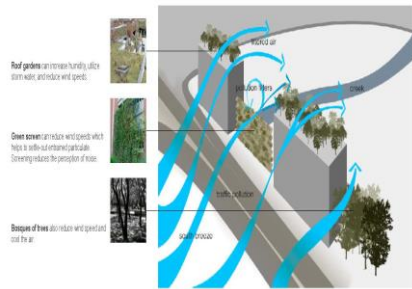
- **Using building massing to gather wind for the dispersion of air pollutants**
- **Use building massing to mitigate noise pollution**
- **Use building massing and vegetated screening to gather wind for the filtration/dispersion of air pollutants**
- **Use roof-top gardens and adjacent courtyards to mitigate air pollution and noise**

Easily re-usable construction materials:

- **Crushed gravel and concrete- use as sub-base**
- **Saw cut concrete can be used as dry-laid retaining walls, edging for planting beds; unit pavers**
- **Crushed glass, gravel, ceramics or aggregate for asphalt and concrete**
- **Asphalt reuse (as sub-base or aggregate)**
- **Re-use of gravel and tar roofing materials (from demolished buildings) avoiding large fees to dump material**

Sustainable Building System Components:

- **Atrium spaces**
- **Shade structures, awnings, overhangs**
- **Internal heat recovery**
- **Thermal mass and insulation**
- **Up-draft ventilation and air scoop, for natural ventilation**
- **Under floor displacement ventilation**
- **Photovoltaic integration**
- **Separation of mechanical spaces**

Sustainable Site Design Concepts and Elements:

Bioswales/raingardens

Basic storm water components:

- **Roof gardens**
- **Bioswales/rain gardens**
- **Permeable surfaces**
- **Grey water systems**
- **Retention and detention facilities**
- **Continuous trenching**

The following guidelines will maximize comfort while minimizing energy costs:

- **Orient buildings to the south**
- **Site taller buildings to minimize shadows**
- **on an open space and other buildings**
- **Orient open space to maximize winter solar exposure**
- **Provide tree canopy cover and reduce hardscape for areas with high summer solar exposure**
- **Provide opportunities for vegetated screening, awnings, overhangs, and adjustable shade structures on buildings with high summer solar exposure**

Sustainable site design should seek the following benefits:

- **Minimize disturbed areas by limiting clearing and grading to a carefully described development envelope**
- **Increase the extent of on-site landscaping**
- **Encourage growth of native and well adapted species and eliminate the need for fertilization and pesticides**
- **Reduce soil erosion**
- **Promote natural recharge and infiltration without the threat of surface contamination.**
- **Reduce runoff volumes and peak runoff rates**

Engagement with adjacent waterways should consider these basic parameters:

- **Stabilization and protection of slopes, water quality, and existing vegetation**
- **Access via pathways, bridges, boardwalks and concerns for safety**

- **Connections to stormwater systems, habitat networks, pedestrian and recreation areas**

The following guidelines will provide a healthier framework for habitat:

- **Link landscape elements to form a continuous network of forage, water, and cover**
- **Create "fingers" of habitat that reach into the urban landscape from the creek**
- **Create zones that provide a diversity of habitat and shelter through layers of plant heights and types**
- **Select native plants that provide food and shelter for song birds, small mammals, insects, etc.**

Buildings are LEED Silver or better (please refer to the City of Trenton Website and the "Trenton Sustainable Brownfields Development Project" report or the LEED web site for addition information on the LEED program)

Appendix A

Sustainable Design Rating System

This rating system should be used in conjunction with the attached guidelines. Redevelopers
will be expected to have a total score of 10 (with a minimum of three points from section #1 and four points
from section #2) in order to meet the minimum threshold for compliance. It will be the sole responsibility
of the City of Trenton's Planning staff to make a determination whether items are adequately addressed.
When submitting this form the redeveloper should place an X by those items for which they seek credit.

1. **Architectural design elements**	**Points yes/no**
➢ Orient the majority of glazing to optimize daylighting potential and heat gain during winter season	1
➢ Orient thermal mass (materials that absorb, store, and conduct heat) and insulation to take advantage of southern exposure while blocking north winds	1
➢ Use roof-top gardens to reduce solar gain in summer and insulate in winter	1
➢ Using building massing to gather wind for the dispersion of air pollutants	1
➢ Use building massing to mitigate noise pollution	1
➢ Use building massing and vegetated screening to gather wind for the filtration/dispersion of air pollutants	1
➢ Creating adjacent courtyards to mitigate air pollution and noise	1
➢ Using/reusing recycled materials on site	1
➢ Building of LEEDS silver or better	2
TOTAL POINT POTENTIAL	**10**

Sustainable Site Design Concepts and Elements: **Points yes/no**

➢ Use sustainable stormwater systems including: 3
    Bioswales/raingardens
    Permeable surfaces
    Grey water systems
    Retention and detention facilities
    Continuous trenching

➢ Provide tree canopy cover and reduce hardscape for areas with high summer   1
    solar exposure (greater than ordinance requirement)

➢ Provide opportunities for vegetated screening, awnings, overhangs,   1
    and adjustable shade structures on buildings with high summer solar exposure

➢ Minimize disturbed areas by limiting clearing and grading to a carefully   1
    described development envelope

➢ Increase the extent of on-site landscaping (greater than ordinance req.)   1

➢ Encourage growth of native and well adapted species and eliminate the   1
    need for fertilization and pesticides

➢ Reduce soil erosion   1

➢ Promote natural recharge and infiltration without the threat of   1
    surface contamination.

➢ Reduce runoff volumes and peak runoff rates   2

➢ Access creek via pathways, boardwalks while addressing concerns for safety 2

➢ Link landscape elements to form a continuous network of forage   1

➢ Create zones that provide a diversity of habitat and shelter through

➢ layers Of plant heights and types   1

➢ Select native plants that provide food and shelter for song birds,   1
    small mammals, insects, etc.

TOTAL POINT POTENTIAL   **17**