Green Building Principles for Master Planning

Sustainability PowerPoint Series created by the Sustainability Task Force, Stark State College September, 2010
Sustainable Sites

The Existing Site

Evaluate the proposed site thoroughly to discover its full potential.

Features to note include:

- Topography
- Floodplains, Wetlands
- Vegetation
- Habitat
- Open Spaces
- Community Connectivity
- Etc…
Identify the program requirements:

- Buildings
- Open Space
- Connectivity
- Parking
- Operations & Maintenance
- Etc…
Green Buildings
Energy Efficiency

Zero Energy Strategies

- Daylight
- Shading
- Natural Ventilation
- Transpired Collector
- Underfloor Air
- Low Energy Lighting
- Radiant Slabs
- Evaporative Cooling
- Thermal Mass
- Night Purge
- Wind Protection
- Green IT
- Bio-fuel
- Solar Electric
- Wind
Sites & Buildings
Energy Efficiency
Green Buildings
Energy Efficiency - Design

Energy and Architecture

National Renewable Energy Laboratory
Green Buildings
Energy Efficiency - Design

Natural Ventilation - Summer Day

50°F to 75°F
Green Buildings

Energy Efficiency - Design

The Section – Transpired Collector

The Section – Thermal Mass
Green Buildings
Energy Efficiency - Design
Green Buildings
Energy Efficiency - Design

Work environment

Open Workspace
Prototyped and evaluated workspace
- Addressed early staff concerns about privacy, noise
RSF
- Pink noise installed throughout
- Furniture has noise-absorbing fabric
- Acoustic noise-absorbing panels on ceiling and some walls

Workstations
- Low walls
  - Workstation panels 42" high
  - Bookshelves between workstations at 54"

Management-level workstations
- 6' with doors
- Open ceilings to support efficiency

Daylighting
- Certified daylighting
- Low walls allow for circulation of air and light
Green Buildings
Energy Efficiency - Design

The Section 60'

- PV System
- Natural Ventilation
- Thermal Mass
- Transpired Collector
- Daylighting
- Radiant Heating & Cooling
- Workplace UFAD
- Labyrinth
Green Buildings
Energy Efficiency - Design
Green Buildings

Alternative Energy Options

Considerations may include:

- Ground Source Heat Pumps
- Renewable Energy
  - Wind
  - Solar PV Panels
  - Solar Thermal
  - Biomass?
Sites & Buildings

Vegetation & Energy Efficiency

Figure 2-12. Solar radiation control.

Figure 2-11. Wind control—directional.

Figure 2-21. Glare and reflection control.

Landscape Design and Planting, Departments of the Army and the Air Force, August 1988
Green Buildings

Water Use

Rainwater Catchment - Philip Merrill Environmental Center, Annapolis, Maryland

Living Machine - Old Trail School, Bath, OH
Sustainable Sites

Stormwater

National Water Commission, Australia
Sustainable Sites
Stormwater Treatment

Factors
- Quality
- Quantity

Low Impact Design
- Minimize & Disconnect Impervious Surfaces
- Bioswales
- Raingardens
- Pervious Surfaces
- Retention Ponds

Structural Design
- Retention & Detention Ponds
- Infiltration Basins & Trenches
- Bioretention
- Porous Pavements
- Green Roofs
Sustainable Sites

Stormwater Treatment

Neighborhood Nursery

Urban Water Quality
Sustainable Sites
Stormwater Treatment

Kent State Stark Pond
Sustainable Sites

Open Space

Open Space
- Green Space
- Recreational Areas
- Natural Habitats
Sustainable Sites
Operations & Maintenance

*Sustainable Landscapes – Reduce mowing*

*Figure 1.* Comparison of native prairie and turf grass root and shoot growth.

Root Systems of Native Plants (Compared to Non-Native Kentucky Bluegrass)
Sustainable Sites
Community Connectivity

Factors to consider:
- Regional Access to Site
  - Public
  - Private
- Main Entrance(s)
- Pedestrian Connections
- Bicycle Access
- Parking
- Etc…
Sustainable Sites
Community Connectivity

Proposed Improved Pedestrian Access to Campus

Lorain County Community College Landscape Master Plan 07.17.09
Thank You!

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