

Sustainable Landscape Design: Connecting Wellness and Environmental Health

Presented by

Thomas S. Benjamin, RLA, LEED-AP BD+C
Sustainable Designer/Landscape Architect

+ 1 413 687-1135
tom@wellnesscapes.com
www.wellnesscapes.com

Landscaping for Health and Environment
CHER, CHA, CTGBC Healthcare Committee
Wallingford, CT
May 16, 2012



Tom Benjamin
LANDSCAPES ROOTED IN WELLNESS



RLA, LEED-AP BD+C
+ 1 413 687-1135

tom@wellnessscapes.com
benjamintom1@gmail.com
www.wellnessscapes.com

DESIGN
PLANNING
CONSTRUCTION MANAGEMENT
MAINTENANCE GUIDANCE

What are “Conventional” Landscapes?

- Emphasize high maintenance, water intensive lawn/turf Areas
- Non-native, “exotic” plant species, including some common invasive plant species
- Lack “sense of place” or reference to the natural landscape of region or locality
- Limited stormwater pre-treatment benefits



Lawns are a Public Health Issue

- There are currently over 40 million acres of turf grass in U.S., roughly the size of New York State.
- 800 million gallons of gas per year are used to power lawn mowers.
- The pesticide use per acre on home landscapes is 20 times more than used on farms
- A gas lawn mower running one hour emits the equivalent pollution of eight new cars driving 55 mph for the same amount of time.
- Approximately one-half of residential water use goes to landscaping.
- The average percentage of landfill waste that is yard waste is 20%, and can be much higher during peak seasons.
- **Source: Green Irene, <http://www.greenirene.com/>**

“Each year, forty billion dollars is spent on lawn upkeep.”



From: Turf War: Americans can't live without their lawns—but how long can they live with them?

by Elizabeth Kolbert, The New Yorker, July 21, 2008.

Kolbert has written extensively about climate change.

www.newyorker.com



This high input practice is also common in institutional Landscapes

How Can We Do Better?
ROI = 3-5 Years (Typ.)
Benefits? Many and Large!



What is a “Low Impact” or “Sustainable” Landscape?

- Emphasizes strong connection between hydrology, soils and vegetation
- Limits use of Lawn/Turf
- Seeks to restore or enhance native ecosystem functions - biodiversity
- Pre-treats storm water in decentralized systems
- Enhances “sense of place”
- Reconnects people with natural systems



Sustainable Landscapes Mimic Natural Systems and REDUCE INPUTS



Healthy Landscapes Feature Alternatives to Lawn and High Maintenance Beds!



Sustainable Landscape Design Goals:

- Compliance with Stormwater Pretreatment Standards
- Compliance with Local Zoning and Other Regulations
- Restoring Native Plant Communities & Biodiversity
- Reducing Long-term Maintenance Needs
- Re-using Local Resources
- Securing LEED Credits
- Adding Natural Amenity Value to Developed Areas
- Increasing Public Awareness/Education Opportunities

Sustainable Landscapes Can Closely Connect Buildings to their Sites

GREEN ROOFS AND GREEN WALLS

- Extend landscape from ground level up walls and to tops of buildings

BENEFITS:

- Stormwater Pre-Treatment
- Energy Conservation
- Increase Roof Membrane Longevity
- Reduce Urban Heat Island Effect
- Provide Aesthetic Benefits/Increase Real Estate Values
- Provide Accessible Public/Private Spaces
- Increase Wildlife Habitat Values



LEED Credits – LEED-NC Version 3

Total of 15+ potential LEED points related to sustainable landscapes, including green roofs and green walls:

- Stormwater Management
- Reduce Heat Island Effects; 50% Roof Area
- Daylight and Natural Views
- Water Efficiency Landscape; Reduce by 50%
- Water Efficiency Landscape; No Potable Water Use
- Optimize Energy Performance; Contributes to Insulation Value
- Innovation in wastewater technologies
- Innovation in design
- Reduced site disturbance, protect or restore open space
- Local/Regional materials (ie. plants, soil media)

Two U.S. federal agencies, 22 states, and 75 localities from Seattle to Boston have instituted policies to require or encourage LEED or similar programs

SUSTAINABLE SITES INITIATIVE (SITES)

**American Society of Landscape Architects with others
has developed guidelines and standards for landscape
sustainability:**

<http://www.sustainablesites.org/>

“Sustainable Sites™ is a cooperative effort with the intention of supplementing existing green building and landscape guidelines as well as becoming a stand-alone tool for site sustainability.”

SUSTAINABLE SITES INITIATIVE (SITES) HYDROLOGY GOALS:

- Protect and restore existing hydrologic functions
- Manage and clean water on-site
- Design stormwater features to be accessible to site users
- Design the site to minimize or eliminate use of potable water for irrigation

Queens Botanical Garden, NY



Glashaus Dev., Emeryville, CA



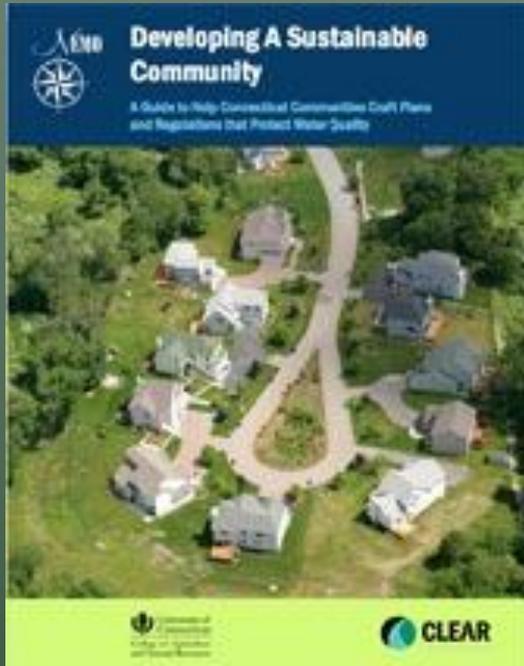
New Requirements for Small, Dispersed Landscape-based Drainage Networks



VAMC Rain Garden/Training & Installation



Technical Manuals Can Help



RHODE ISLAND STORMWATER DESIGN AND INSTALLATION STANDARDS MANUAL

FINAL DRAFT - APRIL 2010



**RHODE ISLAND DEPARTMENT OF ENVIRONMENTAL
MANAGEMENT AND**



COASTAL RESOURCES MANAGEMENT COUNCIL



Case Study: Kent Hospital, Warwick, RI



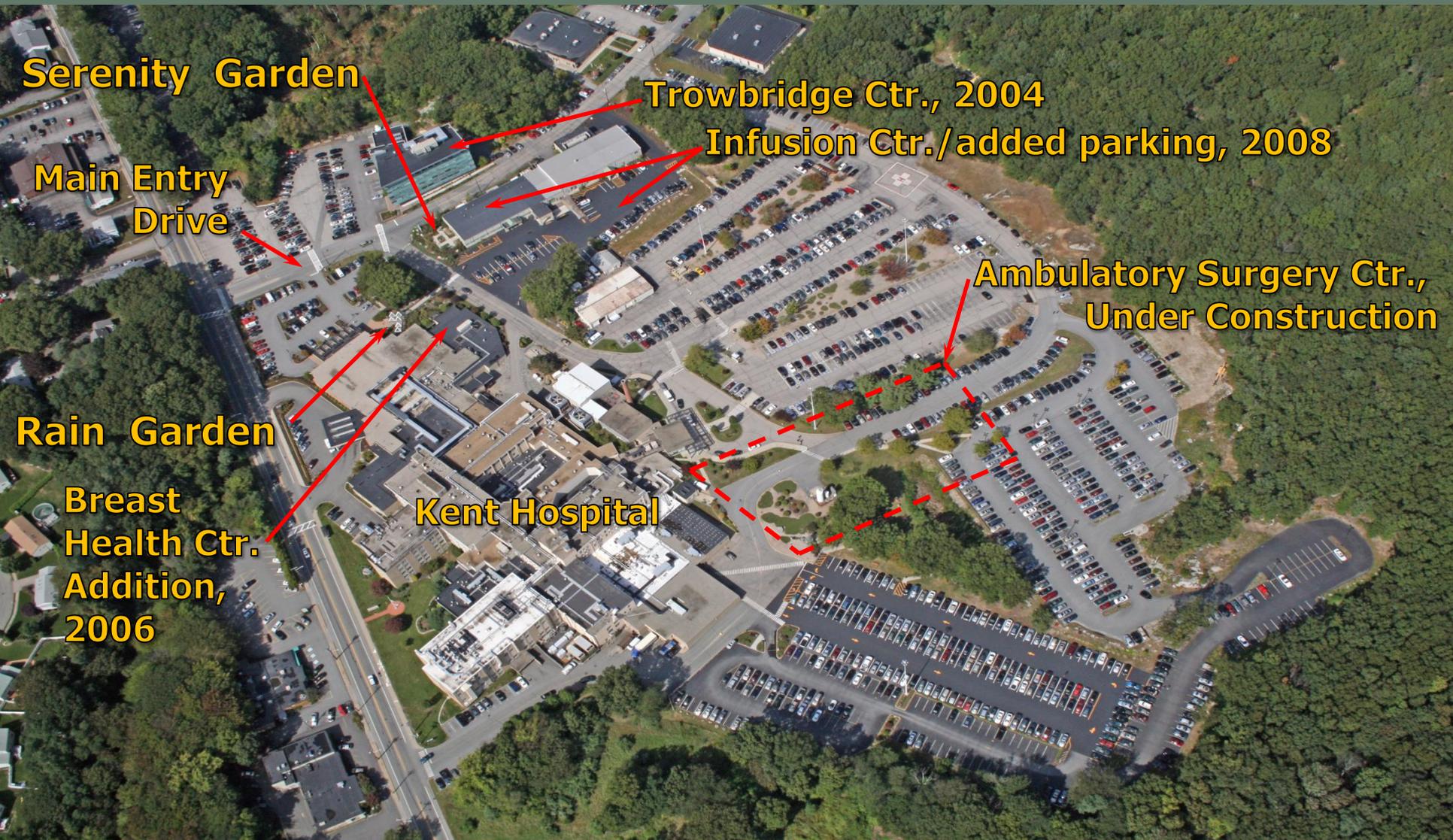
Case Study: Kent Hospital, Warwick, RI



Case Study: Kent Hospital, Warwick, RI



Case Study: Kent Hospital, Warwick, RI



Serenity Garden

Main Entry Drive

Rain Garden

Breast Health Ctr. Addition, 2006

Kent Hospital

Trowbridge Ctr., 2004

Infusion Ctr./added parking, 2008

Ambulatory Surgery Ctr., Under Construction

Case Study: Kent Hospital, Warwick, RI



Photo Credit: Elizabeth Ferland, Kent Hospital



Photo Credit: Elizabeth Ferland, Kent Hospital

Case Study: Kent Hospital, Warwick, RI



Case Study: Kent Hospital, Warwick, RI





Kent Hospital, Rain Garden – *Before*





Kent Hospital, Rain Garden – *After*

Kent Hospital, Rain Garden – *Before*





Kent Hospital, Rain Garden – *After*

Kent Hospital, Rain Garden – *Before*





Kent Hospital, Rain Garden – *After*

Kent Hospital, Rain Garden – *Before*



Kent Hospital, Rain Garden – *After*



Kent, Serenity Garden – *Before*



Kent, Serenity Garden – *After*



Kent, Serenity Garden – *Before*



Kent, Serenity Garden – *After*



Kent, Serenity Garden – *Before*



Kent, Serenity Garden – *After*



Case Study: Kent Hospital, Warwick, RI

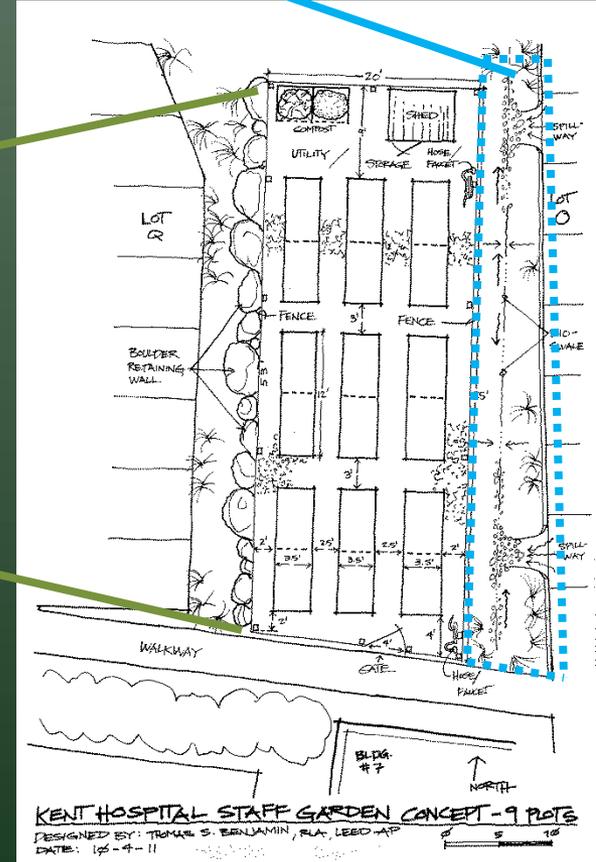
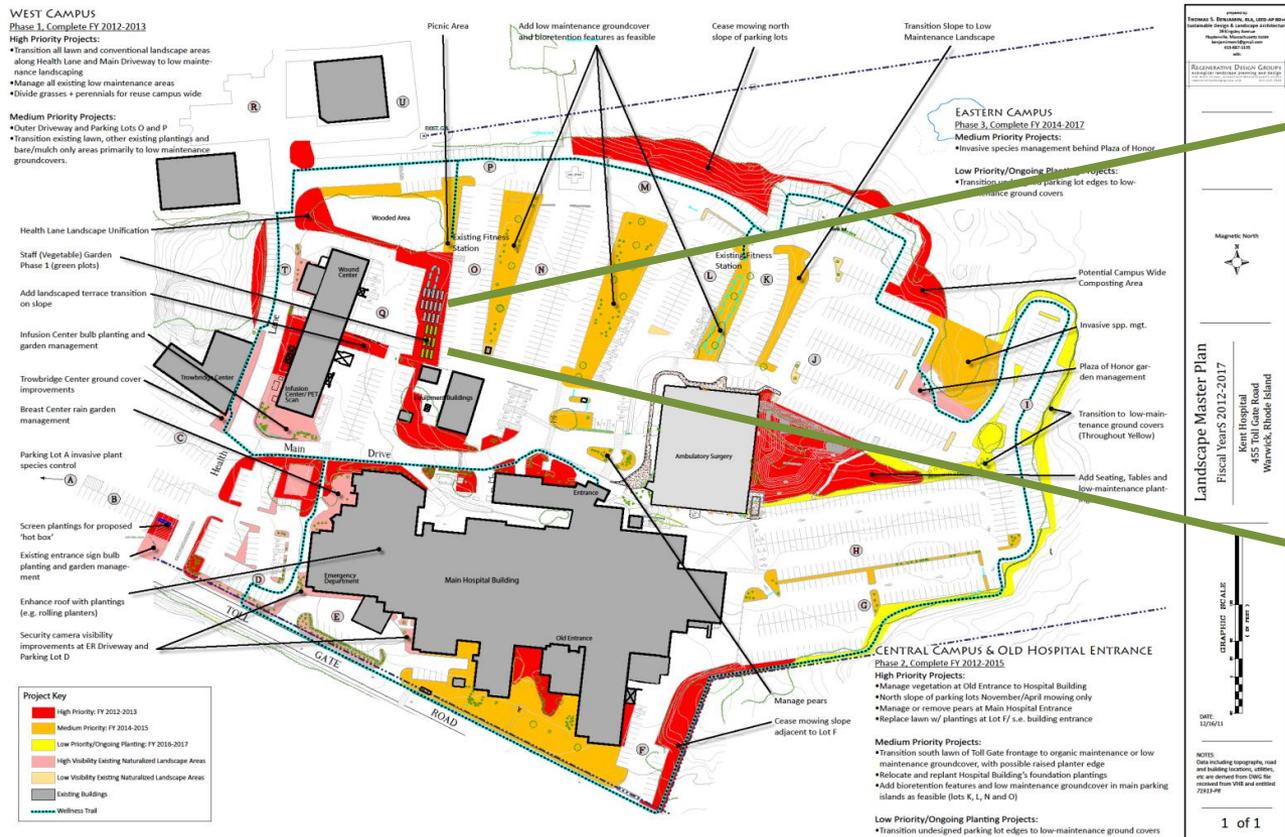
Campus Image: Sense of Place, Sense of Pride





Campus Master Planning:

- Project Identification
- Project Prioritization
- Identify Synergies and Coord. Opportunities
- Budgetting and ROI/Cost Savings





Tom Benjamin

LANDSCAPES ROOTED IN WELLNESS



RLA, LEED-AP BD+C
+ 1 413 687-1135

tom@wellnessscapes.com
benjamintom1@gmail.com
www.wellnessscapes.com

DESIGN
PLANNING
CONSTRUCTION MANAGEMENT
MAINTENANCE GUIDANCE
PERMITTING