

## **MY PERSONAL INSIGHT INTO THE PROCESS OF A LARGE LANDSCAPE PROJECT**

### **CASE STUDY: THE "HILLTOP HABITATS" AT ST. GEORGE'S SCHOOL NEW ACADEMIC CENTER**

Written by Lori Silvia, Landscape Designer/Gardener at St. George's School: September 2016 (additions 2017-2020)

#### **DEVELOPMENT**

##### **EVALUATION OF DESIGN PLANS (OTHERS OR YOURS)**

Sometimes you are the only one who can read, understand and visualize the landscape plan. It is imperative before the project begins that you can explain to others the vision, and reasoning behind all choices. Create a color coded narrative directly on top (tissue) of the proposed plan, this will help clarify to others and explain any changes that are needed. Even elevation 2-D sketches help others to understand. Write a narrative to accompany for further explanations of the project goals and vision. Evaluate plant and material lists carefully, you may know what will and won't work specific to your area, perhaps more so than a Landscape Architect from "out of town". Go to the site, and experience it in its entirety, brainstorm possibilities, doodle, let your mind imagine it, before designing it. How will others perceive it.

##### **DESIGN ON TOP OF THE CONTOUR PLAN/SITE ENGINEERING PLAN**

Most new LEED projects will require water to be contained and used on the site. In order to design effectively and understand how water moves through the landscaping you must learn to design on top of the contour plan. Swales, raingardens, capture basins, direction of flow, and grade of slope are indicated by the directions of lines in this map. Based on the contour plan I created a punch list of zones I would need to address, for example: upland dry slope, intermediate slope, wet basin, salt runoff, moving water, this helps in choosing appropriate plant material.

##### **LEED -VS- SUSTAINABLE S.I.T.E.S. INITIATIVE**

(United States Botanical Garden, Lady Bird Johnson Wildflower Center, American Society of Landscape Architects)

There is not much information for ecological designers from LEED. Sustainable SITES creates a punch List with categories: Site Context, Assessment & Planning, Water, Soil & Vegetation, Materials, Human Health & Well Being, Ecosystem Services, Resiliency, Construction, Operations & Maintenance, Education & Performance, and Innovation. I find all the topics are well described and can guide the questions you should be asking yourself as an ecological designer.

##### **PLANT RESEARCH**

Specifically, I was looking for Rhode Island Native plants, using the State Plant Listing by Rick Enser, and adding N.E. Coastal native plants into my research. Plant ranges North to South from the USDA Plant data base website were considered to address issues of climate change, heat and drought. Compare multiple sources about the same plant. Studying local native habitats was essential to this project, I walked around the dunes, wetlands, wild fields and forest edges, by the reservoir, Norman Bird Sanctuary, Sachuest Point and the beaches to see if that could add insight into plant choices or clarify design ideas.

#### **PROCESS AND DESIGN**

##### **PLANTS SERVE A PURPOSE**

Each plant was selected or eliminated based on criteria, each plant has a job or multiple jobs, each was researched and evaluated for wildlife value, native status, habitat and range flexibility, erosion control, salt tolerance, size, water conservation or absorption, edible or medicinal uses, pollinator use, height, and addressing climate change.

##### **DESIGN LOGICALLY AND WATCH CAREFULLY**

Useful plants address different site situations, even with the best of research, design and a little gamble, native plants move where they like to be. If you can understand that and then use it to fine tune additions or subtractions within the site it will help. Be open to the constant fluctuation and evolution, and keep records.

##### **KEEP THE BIG MONEY VISTA**

Ocean view properties come with a premium price, enhance, and do not hide this view! It is what makes this site spectacular. I eliminated many very large trees from the original proposed design to appreciate and protect this asset.

##### **BLUR THE LINES WITH COHEASION**

The landscape project has parameters, bring the outside in and the inside out. Take a tree species for example; Acer rubra 'October Glory' plant same species within the site (6) and also outside the site (2), and also take something from outside the site, Quercus palustris (Pin Oak) and add it into the site. Key plants should be repeated in the landscaping and around campus. What does the regional native landscape look like, I also wanted to connect with and honor this.

##### **IMPRESSIONS and CONNECTION PLANTS**

When designing a naturalized ecological landscape, it may not be easily understood by viewers. They may feel it is unkempt, messy, or ignored, educate as much as possible the intentions and goals of your project. More importantly, lead people in by maintaining clean and clear edges. Use some plants that are easily identified and enjoyed by most people (Hydrangeas, Hosta, Boxwood, Maple trees, Narcissus, Rudbeckia) these are used as a gateway to lead people into increased diversity and integrated native landscapes. This recognition of plants sets the tone of “I know this” and can lead someone who is hesitant to a deeper understanding and connection to the landscape, maybe they will look forward to witnessing the ever changing evolution and seasons this landscape offers.

### **DESIGN THE WINTER LANDSCAPE**

There are approximately 4-6 months when perennials and deciduous trees are dormant, what kind of textures can you add to the winter landscape? Colorful evergreen conifers or plants, structures, shapes, bark variations, plants left standing like ornamental grasses or seed heads. Where does the snow go? Which way does the road and sidewalk salt/ice melt drain? Which way will crews plow or push the snow. These are also important questions to address with seasons. I needed to “sell” this building/project for SG even in the winter to a worldwide visitor, or to benefactors.

### **WHERE IS THE PRESENTATION ZONE (THE \$\$\$ ZONE)**

The way in which you present the approach to the main door is important visually for 12 months, concentrate some of the money and pizzazz into this area. I took some liberties into less native and more formality for this area, going for texture, color, and cohesion. Always experimenting at this point to find the right look and balance.

### **CAN YOU SEE WHERE YOU WANT TO GO AND ARE THOSE WALKWAYS DESIGNED FROM HABITUAL PATHWAYS**

Height and size matters, can you easily and clearly see and find the path to the doors, so the approach isn’t hidden or confusing. We have issues of students “cutting through” the landscape because access wasn’t a direct line from where they were coming from. Also, students often walk in large packs, wider walkways will save time repairing grass edges.

### **GO INSIDE AND LOOK OUT THE WINDOWS/DAYLIGHTING**

Windows offer natural and healthy sunlight to enter a building/classroom, this helps keep the electricity cost down for light and heat (passive energy) and may make people feel happier and more connected to the outside world, preserve this. Also what does a person see while inside the building? Is it calming? Beautiful? Can you enhance or block the view?

### **SCALE AND RADIANT HEAT OFF BRICK EXPANSES**

This is a huge building, one that may make people feel insignificant. By including some taller trees without obstructing the views it brings an intermediary feeling of space and person in relation to it. Trees planted in front of large expanses of brick absorb some of the radiant heat and can project a shadow onto the wall as a way to prevent radiant heat out into the atmosphere.

### **PLANT SIZE: LANDSCAPE PLUGS, SMALLER TREES, AND PERENNIALS IN GALLONS**

I have noticed, in a landscape plug application choosing plants with similar height can help each plant establish quickly. Adding clusters of taller plants or shrubs will affect the other plants beside it. Trying to add more plugs into an existing “field” of growing plants may create a slower growing process for the newly planted. Smaller trees are known to establish more quickly with less resources, and some perennials were upgraded to gallons for slowing the flow of water.

## **INSTALLATION AND APPLICATION**

### **GO TAG YOUR OWN TREES/SHRUBS AND INSPECT CAREFULLY**

This is essential for quality control and getting the best possible product. Re-inspect on-site and reject if needed!

### **VISUAL INFORMATION AND DOCUMENTATION**

Documentation of the process and problems is very useful. I was able to prove the site engineering wasn’t working by videotaping moving water during a significant heavy rainstorm. This led to changes. It is also important to have dated photographs and the before and after pictures if any work needs to be validated, or to present problems that occurred on site. Show successes for presentation, lectures or funding for other projects.

### **NOTES**

Daily notes were important and kept about everything, billable hours, details, problems, solutions, changes, weather, plant inspection, design or placement changes, watering, meetings, etc. Don’t expect yourself to remember everything.

### **WORKING WITH A FOREMAN AND CREW OF AN OUTSIDE COMPANY**

Meeting and talking about your expectations, goals, or clarifications of the project helps puts everyone on the same page, even better if it is put into writing. I found some language barriers, and learned the phrase “Plant with Love” in Portuguese, “planta com amor” many laborers are accustomed to planting fast, hard, and how they were taught a long time ago. It is up to you to explain perhaps new techniques and assure quality control. I also made it clear upfront that I

am an intuitive designer, and as site manager, I have the right to change the design at any time during the installation, even if that stops work temporarily. I also insisted that I work alongside of the crew every single day, a Labor Union rep watched me closely to make sure I did not take time away from union labor. I set the design and layout of every plant.

### **CHANGES ARE INEVITABLE**

If anything, this project made me realize sudden changes happen often, when construction and landscaping are happening at the same time. Changes can continue to happen later for maintenance, or repair.

### **OVERSIGHTS**

Be observant! Original building plans didn't have outside access to water (they were added during the installation to 2 sides of the building). No access for mowers to mow the lawn areas. If you can look for these things ahead of time on the plans, it may save money and headaches later. The site engineering is complicated, and created an island in some areas, there could have been a creative use of bridges of access in certain areas where people want to go.

### **CONSTRUCTION PROBLEMS and FLEXIBILITY**

Often landscape work was delayed because heavy equipment prevented us from working in areas that we had released plant material for. Many circumstances were encountered when landscaped areas were completed and then construction workers went in with work or heavy equipment that ruined that work. Contractors don't often consider the delicate nature of new landscaping, I had to be vocal and protect it as much as possible. Best bet, plan for it.

## **MAINTENANCE**

### **KNOW YOUR PLANTS**

Know your plants and what they do, what they look like in early-late spring, how they grow, when they bloom, how much they self-seed, how they spread. I also am learning about new plants that I experimented with. I may need to alter some of my decisions based on performance, even over performance. Let go of your ideas of perfectionism, and watch.

### **KNOW YOUR WEEDS !!!!**

Constant weeding is essential for allowing native plants to grow unimpeded. Importantly I discovered, weeds can inform what is missing. I found nitrogen fixing legumes, and taproots missing. Some "good weeds" may not be native, evaluate.

### **CONTAMINATION**

Some plants were contaminated with other plants or weeds. Schizachyrium was contaminated by dandelions, which prevented optimal growth. Some of the Rudbeckia fulgida, was actually a Rudbeckia cultivar (I can tell by the leaf shape). Andropogon had Juncus effuses in it. Aster nova-anglais was a tiny landscape plug and very weak when they were delivered, and I lost an estimated 70%, but most bounced back in the second year. Some didn't emerge until year two.

### **PRUNING & CUT BACKS**

(Revised 2017, implemented Chop & Drop method, conserving most biomass like a naturally decaying field habitat)

The unwritten aesthetic of "a manicured (campus) estate" challenges me to balance this work. I am taking a very light approach to pruning, having a naturalized look at all times, and trying to understand each plant and how it reacts in an engineered soil, and how to keep its optimum growth. Looking at how plants naturally breakdown is important. Most pruning will occur in late winter to late spring (perennials), winter (trees), early summer (spring flowering shrubs). I don't rake to conserve pollinator habitat in the leaf litter. Experiments and evaluations are always ongoing.

Maintain clearly defined/manicured edges between lawns & gardens, mulch edges (only).

Lawn grass should be kept at a 3" conservation height for the best photosynthesis and preventing weeds, and organically fertilized after aeration and over-seeded yearly.

### **VOLES**

They are problematic when leaving the landscape to decompose naturally, especially in warm, dry winters. Reparation of nests and tunnels starts in January with cutbacks, consider how much biomass to leave behind, and replant any plants that have been eaten and lifted, but have some roots left.

## **TAKE EVERY OPPORTUNITY TO EXPLAIN AN ECOLOGICAL NATURAL LANDSCAPE**

Integrated does not mean Messy. Explain why plants should touch. Explain that this saves resources. Explain warm and cool season grasses. Explain the purpose of letting areas self-seed and be wild. Explain why layers are important. Explain why pollinator insects and native bees are important, and are really quite passive. Explain why we are trying to keep water in its place. Explain why we use native plant choices. Explain why we should not be walking through this landscape. Explain why poisons will not be used. Explain why we must learn to embrace a new platform of design. Explain how people can bring this type of design into their own yard!

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## **MAINTENANCE NOTES FROM THE FIRST YEAR JULY 2015-2016**

Work with Construction Company and Landscape Contractor with on-site direction, design and layout of all areas  
Assure quality control, pre-prune tree leaders and assure correct tree depth at installation, approve plant material  
Watering for establishment

I continued planting to complete many areas myself: East side upper, SW corner entrance, North walkway edge, N. side electrical box, rain gardens (repair)

Phase 2/West side: started 12/1, soil installation, plant trees and shrubs, sod is installed. No perennials were planted.  
Remove broken glass (construction broke window above finished landscaping) from North area

## **MAINTENANCE NOTES FROM THE SECOND YEAR 2016**

Continued research to choose plants to help fill in some of the gaps I felt were too wide. Weeds inform decisions.  
Increase plant and root diversity into the landscape with 500 plugs, 37 shrubs, and 51 perennial gallons  
Should I Water or Should I Wait? Watering techniques that work (heavy drops) conserve natural resources as best I can.  
Which self-seeded plants to keep or edit? Pussy toes, Queen Anne's lace, Vetch, and other wildflowers and weeds.  
Deadheading *Solidago odora*, necessary or am I just crazy? Grey seed heads hide the beautiful foliage of the plant.  
Using native seeds from campus gardens to re-seed the wild fields with more plant diversity has become my mission!  
Landscape contractor will not return to finish West side, begin to execute new concept and new planting plan.  
Five *Acer saccharum* (saved for LEED credits) West side are in serious decline from climate and construction damage, will add secondary row of trees (4) inside the garden perimeter to plan for eventual loss or removal of those trees.

## **MAINTENANCE NOTES FROM THE THIRD YEAR 2017**

Remove all tree stakes (intentionally left them on through first year) very windy site, large trees with small root zones  
New plan for West side, address much sunnier landscape from defoliating decline of (5) *Acer saccharum*  
Plants on the Move! Viable seeds travel here, there and everywhere! New plant communities are forming  
Create stone bridges to slow water down and control erosion on South side, stabilize upper areas before lower areas  
West side focus planting, 4 trees, 11 shrubs, 138 perennial gallons, 360 bulbs, 448 *Carex penn.* plugs  
Weeding. Editing. Crab grass is my nemesis! It loves Heat, Salt, and Sandy soil, so does *Asclepias tuberosa* (add more)  
New watering technique. Damm nozzle forms heavy velocity drops, targeting watering through thick integrated foliage

## **MAINTENANCE NOTES FROM THE FOURTH YEAR 2018**

New experimental technique: Chop & drop. Noting plants natural breakdown, retaining all bio-mass and seeds on site, stems left 18-24" for nesting native bees, stems broken into pieces and scattered like pick-up-sticks (natural mulch)  
Add nurse logs to help stabilize erosion, adding beneficial fungi, bacteria, humus into soil and support insect nesting.  
Rake *Spartina patens* (traditional harvesting) with a Bow rake in late Spring after release of last year's growth  
Continue to increase plant and root diversity into the landscape with 350 plugs, 6 shrubs, and 58 perennial gallons  
Weeding and Editing continue, many wildflowers were found self-seeded into the landscape. Document  
Native plants self-seeded into lawn areas. Start to aerate, organic fertilizer, over seeding 2x per year helped  
Deal with contamination of hydro-seed that washed into landscape from above areas. Extensive weeding!  
Over-seed raingardens with *Chelone glabra* & *Lobelia cardinalis* from Library raingarden

## **MAINTENANCE NOTES FROM THE FIFTH YEAR 2019**

Windstorm knocked over one (predicted) and failing *Acer saccharum* on the West side. 2 more were removed for safety  
Late January begin Chop & Drop. Creating seedbank and natural mulch after perennials are naturally breaking down  
Fix severe vole damage  
No perennials planted this year. Many plants are self-seeding into other areas, watch and wait. Edit if needed.  
Add *Nyssa sylvatica* and *Cercis canadensis* trees beside *Acer rubrum* "Sun Valley" West side to replace *Acer saccharum*  
IPM for *Betula 'Renci'* for bronze birch borers could negatively affect pollinators, decide to not treat for their protection  
Continued worry about severe drought in sandy soils  
Problems: Blight *Larix laricina*, Bindweed, Horseweed, spittlebug, hydro-seed contamination again  
Weed between *Carex penn.* on West side, sweeping "river" look and keep it simple as visual entrance into landscape  
Develop plans to help more people engage in this landscape, community service, science labs, outdoor classrooms, tours