

Joe Holdreith
FNRM 4501
Gary Johnson
3/4/2020

Critique #2

Cities are largely incompatible with green infrastructure. Impermeable surfaces divert runoff into stormwater drains, which are often ill equipped to tolerate the intense loads runoff that impermeable surfaces generate. Before human settlement, stormwater would primarily be absorbed by soils inhabited by the thirsty root structures of plants and trees, with only a small fraction of water remaining on the surface as runoff. Human development compacts soils such that trees and plants struggle to establish their roots and water and air cannot adequately saturate the soil. Due to impermeable surfaces and soil compaction, cities tend to lack the green infrastructure that could help mitigate some of the consequences of grey infrastructure. In order to blend green and gray infrastructure, cities will have to begin addressing the issue of soil compaction and permeability through technology like engineered and structural soils. It is in our benefit to do so as the stormwater retention provided by trees and rain gardens could help solve our urban stormwater problem.

The peer reviewed article *Stability of landscape trees in engineered and conventional urban soil mixes* is study in which tree development with several soil types is compared. The soil types range from several engineered soils to compacted soil that you would typically find in an urban environment. As far as peer reviewed literature goes, the article is relatively short at just five pages. In order to counteract the accessibility created by the short length of the article, the authors adopted a writing style that mimics the intense density of compacted soils. In other

words, the writing can be described as bone-dry (just like urban soils). The introduction and methods sections are a verbal labyrinth that bombards the reader with a volley of long sentences and soil content ratios. The methods section would have been simpler to understand if the authors had incorporated more than one diagram to describe the experiment's design. I would not be able to explain the experiment's design, which inhibits my capacity to interpret the findings of the study, and to critique the study itself. Despite my initial confusion, however, the latter portion of the article clearly communicated the results of the experiment. The use of data tables was the most effective tool in communicating the correlation between engineered soils and healthier development relative to compacted soils. Although the results were communicated effectively, they would be more meaningful to me if the authors had described the methods more clearly. A key strength of the article is that the authors acknowledged that several independent variables could have affected the results of the study: "the study was conducted using small-diameter, juvenile trees evaluated with a pulling procedure; large trees exposed to dynamic wind forces may not respond in the same manner. Future research should focus on larger trees and subject trees to dynamic loads that better replicate wind gust conditions" (Bartens). This disclaimer bolsters the validity of the study by grounding the results in a realistic context that acknowledges its shortcomings. The intended audience seemed to be academics, as the article was published in the scholarly journal *Urban Forestry & Urban Greening*. The vocabulary laden language, winding sentences, and dry writing style discourages me to believe that this article was published with the public in mind. I can't fault the authors too much, however, considering most peer reviewed literature adopts this sort of technical writing standard. The barrier to comprehension and subsequent lack of accessibility in this article is by far its greatest

shortcoming. With that said, I appreciate that this study supports the feasibility of integrating green infrastructure into grey spaces and that it proves we have the technology to do so. I also commend the authors for communicating the results responsibly with a disclaimer regarding the limitations of applying the studies' findings to a real world context.

The *Green Parking Lots* article, authored by the Seattle Department of Construction and Inspections, is less of a cumbersome read than the peer reviewed article mentioned above. Although the intended audience is permit seeking construction firms or contractors, I think the article is also well suited for a broader public audience. The language is less academic than the peer reviewed article and several diagrams are provided for clarification. I interpreted the purpose of this article to be to inform construction firms about green infrastructure in parking lots and to provide examples of how to implement it. The article does a surprisingly great job of giving readers a brief introduction to the topic of what green parking lots are, why they are beneficial, and which city codes they meet. The article is thorough in that the authors provide cost estimates for implementation and maintenance, several design examples, general guidelines for implementation, and the limitations of green parking lots. Although thorough, the information is presented in concise paragraphs and bullet points that are easy to digest, which is why I believe this article is better suited for broader audiences. For me, the meaning evoked by this article is an image of a greener future, where the bland, cement, unipurpose parking lots that we are accustomed to seeing today are replaced by multipurpose parking lots defined by greenery like rain gardens and trees. I also appreciate that the authors included a section about the limitations of green parking lots such that readers understand that green parking lots aren't a solution to climate change, rather a component of the broader transition into a greener future.

Another strength of the article is that the maintenance costs of green parking lots are discussed in relation to grey lots: “The estimated total capital costs of construction for the green parking lot design options are less than the conventional parking lot design option. Additionally, the estimated maintenance costs for the green parking lot design options are less than the maintenance costs for the conventional parking lot design” (Seattle Department of Construction and Inspections). This inclusion serves to highlight that mixing green and grey infrastructure is well within our grasp, both economically and technologically. Although it may sound silly, I found that the comprehensive, candid, concise, and clear style of writing in this permit tips article elicited a very inspirational tone that guided my thoughts towards the green future of urban design.

I found the video *Structural Soils, Construction Technology* to be a great follow up to the peer reviewed article. Where the visualization and communication regarding engineered and structural soils is lacking in the peer reviewed article, the video fills in the blanks and provides a start to finish view of implementing engineered soils in a real world application. I have two main critiques for this video. First, a minor issue, I felt that some of the cuts were a bit long, for example the scene where the construction man is guiding the base for the tree for far longer than we need to see (Egenartproduktion). There are several cuts like this, where viewers are sitting in wait for the next phase of construction . Second, I would have liked to see the cost of construction and the total timeline of the build. I am inclined to believe that this was a labor, resource, and time intensive investment which is perhaps why these types of engineered soil planting beds aren't as common. However, given that the video is posted on youtube (a free and accessible platform) and that its purpose is to simply show the construction process, I don't find

the lack of information about cost and labor to be a huge problem. I interpreted the intent of the video's creators to be to educate and get the public interested in green design, which I think the video accomplished (I made my roommate sit down and watch the entire eight minutes because I was so interested). The introductory text at the beginning of the video was a nice descriptor of the issues associated with grey infrastructure and it was vital in regards to interpreting the meaning of the video. The introduction provided the framework for viewers to think critically about why engineered soil beds matter. Instead of just thinking about the construction process as a cool sequence and that the finished product looks nice, the introduction encourages viewers to consider the ecological services that grey infrastructure has removed and the ways in which we can regain them. I believe that without the introduction, viewers would be less likely to think critically about what grey spaces have really done to Earth's ecosystems, beyond simply taking up space that would otherwise be undeveloped. The text that accompanied the construction scenes throughout the video were brief descriptors of the process and I think that they were a necessary inclusion for comprehension's sake. My final praise for the video is the epic theme that plays throughout the construction process. It helped to keep me engaged and generated some emotional response within me. Watching the process with that entrancing theme in the background, I felt as though we are on the forefront of a struggle for a green revolution in a bland, grey landscape.

There are unfortunate consequences to a grey infrastructure other than a lack of aesthetic appeal. The peer reviewed article served as solid evidence that we as humans have the capacity to remedy those consequences and make the grey compatible with the green, however, the article was so dense that I doubt the general public would read it. The Seattle Tips article was a pleasant

surprise, as I expected a rather boring read when I first took a look. It was written with a near perfect blend of comprehensiveness and conciseness, all wrapped up in an easily digestible package. I think it proved that we have the capacity to change our grey infrastructure in many ways that also happen to be cost effective, which is a huge deal to the typically economically-minded human being. I especially appreciated the inclusion of the cost discussion, as I find it likely that cost would be a huge motivator to greenlight green projects for any government officials, city planners, or construction firms that might read the article. My other praise for the article is its focus on the limitations of green parking lots, which indicates to the reader that we have much more work to do than just renovating our parking structures. This type of big picture thinking is critical if we are to take progressive actions to green-fit our desperately grey urban spaces. Finally, the structural soils video provided an informative look on the process of installing an engineered planting bed. Although I would like to see a cost and time breakdown, I think the video fulfilled its purpose of generating public interest in mixing the green areas with the grey infrastructure.

Works Cited

Bartens, J. Wiseman, P. E. Smiley, T. E. (2010) *Stability of landscape trees in engineered and conventional urban soil mixes*, Urban Forestry & Urban Greening, Volume 9, Issue

<https://doi.org/10.1016/j.ufug.2010.06.005>.

Egenartproduktion (May 22, 2011). STRUCTURAL SOILS, CONSTRUCTION

TECHNOLOGY.m4v Retrieved from <https://www.youtube.com/watch?v=S7kbSnnJwDI>

Seattle Department of Construction and Inspections. (2005). *Green Parking Lots*. Retrieved from

<https://www.seattle.gov/DPD/Publications/CAM/CAM515.pdf>