Ecological Performance Checklist

This checklist contains information you will be required to submit and present as part of your next team assignment. It also clarifies expectations on what you must do to upgrade the wiki you are inheriting from the last team.

Inheriting a Wiki from Another Team

When you receive your next team rotation assignment, each team member should visit the wiki site for that building system and rate the site in its current form. A link for formally rating the site is available in the left menu of the wiki, entitled "Inter-Team Evaluation 3: Human Performance". Click this link to go to the inter-team survey. Each team member must complete this survey based on his or her personal review of the site. Since you must complete the online survey in one sitting, it's advisable to review the wiki before you attempt to complete the survey, keeping in mind the major sections required in the checklist as your criteria for evaluation. As each team member reviews the site, it's advisable to make notes in the comments section of the site or in the narrative itself regarding what needs to be fixed or improved. The entire team should meet together to discuss these opportunities and agree on a plan for remediation if necessary. At a minimum, teams should address deficiencies identified by the instructor in the grade sheet for that wiki. Addressing these deficiencies will bring the wiki up to the minimum standard for the site.

Adding the Ecological Performance Module

The fourth part of your team assignment is to add new content pertaining to ecological performance for your assigned building system. This content should include, but not be limited to, the following. Note that each of these sections requires that you have a clear understanding and definition of the scope of systems required for functional equivalence. If this has not been clearly established by previous teams in an effective way, you should begin your work by revisiting this part of the wiki and clearly establishing a reasonable scope of analysis that makes your system functionally equivalent to the reference system as discussed in class. Introduce your ecological performance page with a clear description of this scope, describing what you are and are not including as part of your analysis.

- Materials flow analysis for extraction and manufacturing – what does it take to get the product from underlying raw materials all the way to the job site? For your assigned system, trace ALL components back to their original raw material sources. Represent this information in the form of one or more material-on-node diagrams. Include a narrative describing the diagram and all associated assumptions and references. Do not account for energy inputs or "second generation" material flows such as those attributable to the manufacture of equipment used to manufacture your system.
- Supply Chain Risk Analysis – over the short, mid, and long term, what are the risks that could disrupt your supply chain for this product/system if you decide to use it? Identify levels of risk associated with each raw material that is drawn into the supply chain. Focus specifically on the raw materials at the left side of your material-on-node diagram, although you may also include interim materials that are manufactured during the process of getting to your end product or system. Your risk analysis should address issues of resource scarcity, human health risks, environmental impact risks, and sociopolitical risks, including regulatory risks that are likely to arise from other considerations. Consider five year, ten year, and 25 year time frames, and assign a high-medium-low risk rating to each type of risk for each of your materials in your analysis, represented in tabular format. Accompany your table with a narrative to describe your assumptions and sources for assigning risk ratings. Base your ratings on known and foreseeable effects associated with each material type.

- Materials, energy, and waste inventory for installation stage and use stage– what does it take to get the system in place and running so that it can meet its functional requirements? For your assigned system, develop an inventory of matter and energy flows into and out of the analysis boundary for the installation (construction) phase. Identify all flows of materials, energy, and waste that come into or out of the construction site during this phase due to the installation of your system, along with most likely source or sink system for each flow (these will be represented using material-on-arrow or whisker diagrams). Include a narrative to explain your diagram and all associated references and assumptions. You may include labor and/or equipment as part of this analysis, but please be sure you show the exit of that labor/equipment on the downstream side of the diagram to reflect the fact that these are temporary resources brought to the site and then removed when they're done.
- Collateral damage analysis for installation and use phases – what *negative* effects might your system have during the installation and use stages on humans, ecosystems, and/or resource bases *within* your site boundary? For your system, systematically identify and discuss all negative impacts that might occur within the analysis boundary during construction and operation of your system, i.e., on your building site. Include displacement, destruction, or degradation of ecosystems, depletion or degradation of resource bases, and disruption, degradation, or other negative impacts on human systems.
- Collateral synergy analysis for installation and use phases – what *positive* effects might your system have during the installation and use stages on humans, ecosystems, and/or resource bases *within* your site boundary? For your system, systematically identify and discuss all positive or restorative impacts that might occur within the analysis boundary during construction and operation of your system, i.e., on your building site. Include restorative, synergistic, or stabilizing effects on ecosystems, regeneration or enhancement of resource bases, and/or enhancement of the human environment.
- End-of-life-cycle analysis – what might happen at the end of the useful life cycle of your building system? For your system, develop three different disposal scenarios and identify health risks, environmental risks, and potential liabilities associated with each scenario. These scenarios should include the "dump out back" scenario, the customary/minimum legal scenario, and the proactive environmental scenario. If you were a contractor who needed to demolish or remove this system, what would your choices be, and what would affect your decision? Include a narrative to describe your approach, assumptions, and references.
- Manufacturer's Claims Analysis – what environmental benefits do manufacturers or proponents of your system claim their products provide? What risks do they disclose? Locate at least three sources of information related to your system type and identify and compare specific claims or disclosures made about the system with respect to human health, environmental impacts, or resource consumption. Note any comparisons made by a manufacturer that reference other manufacturers' products. Comment on the credibility and reasonableness of these claims. Be sure to examine prior teams' work on third party sources of information as a source of data, and add your sources to that part of the wiki if you can enhance their work. If possible, try to find at least one reasonable and at least one extreme example to illustrate the spectrum of claims made by manufacturers or associated parties. If your system involves assembly of individual components on site, you can obtain manufacturer information for one or more of the core components of your system in lieu of the system as a whole.

Be sure to spell- and grammar-check your work and review for consistency and format. All your sources should be properly cited and referenced using ASCE reference guidelines. Plagiarism will be noted in this assignment and documented as per the syllabus.