

# Research - Environmental / Functional Assessment

Study Location & Issue(s) \_\_\_\_\_

## Goals and Objectives

The goals of this exercise are to conduct an environmental and functional assessment of monolithic paving areas (i.e., concrete, asphalt, or similar) through the following lenses:

- The environmental impacts caused by these systems, and
- The environmental or functional causes of structural weakness, decline and/or failure of the system.

Ultimately, you will use these findings to develop a set of recommendations addressing the way(s) interlocking pavements can be used to address these problems.

The exercise's learning objectives include the following:

- Conduct critical assessments of the impacts pavement systems have on environmental function, and vice versa.
- Understand how field studies and product/material research are used to reveal important analytical aspects of the design process to assist clients and their respective design teams develop financial, environmental, and functional site strategies.

## Assignment

Find a site whose image and function are primarily defined by pavement(s), and that is currently suffering from structural and/or environmental degradation or failure. This project differs from the earlier case study exercise in its scale and scope—this project requires assessments and procedural recommendations be made at the site level. Once you have identified your study site, you will conduct the following steps:

- **STEP 1:**  
Develop a written and graphic record of observable site conditions. Gather this information through mapping, written explanations of how the site is currently being used and how it might be used (influence(s) on potential design outcomes), record issues and opportunities through drawings and photographs, and provide written descriptions of the conditions across scales—full context to singular detail.
- **STEP 2:**  
Identify the information that you do not have. Determine the information that you think is needed to fully understand the site and its context so that you have a more useful and complete bank of information from which to proceed. Similar to the earlier step, identify and justify the need for the information you think you need to gather, figure out how to find or generate it, get it, and describe it.
- **STEP 3:**  
Examine/analyze the information generated in steps one and two. This is both the hard part and the fun part of the process in that to do it correctly you have to correlate various parts of program (current and future) with site conditions (current and future).
- **STEP 4:**  
Present your findings and make recommendations to resolve the issues/problems revealed through the analytical processes outlined above. This final product generated during this step involves assembling a report of your findings and recommendations. The report is to be a well-crafted 8½" x 11" document presented as both hardcopy and PDF formats. Completing the following steps is required:
  1. What were the questions (steps 1 and 2) about the site, its context, its use, and the condition of the pavement(s) that you needed to answer?

2. What are your answers (assessments)?
  - This can be presented in a narrative, a series of maps or map overlays, diagrams, sections, photos, and/or simulations.
  - What assumptions have you made and what questions still need to be addressed as you proceed with making informed design recommendations related to mitigating the current conditions?
3. What are your recommendations to ameliorate the current conditions using recognized best management practices (BMPs) and available interlocking pavement materials and technologies?

## **Recommendations**

The following is a standard “checklist” of analytical “categories” that you might find helpful in formulating the questions.

### **Site Specific Conditions:**

- Use: past, present, future
- Terrain: elevation, slope, slope orientation, physiographic pattern (shape)
- Geology
- Soils
- Water: surface and sub surface
- Vegetation: significant trees (root zones + extent of canopies)
- Microclimate(s)
- Infrastructural systems: water, electric, roads, sidewalks, and access points
- History / Culture
- Maintenance / Management regimes

### **Contextual Conditions:**

- Land Use: contiguous, areal
- Land Ownership
- Access: roads, bus, pedestrian, recreational, other
- Water: local and regional implications
- Climate
- Rules & Regulations: local, state, federal
- Fire access requirements
- Comprehensive Plan
- Design Guidelines

### **Additional Considerations:**

- Comparative capital cost modeling
- Comparative environmental cost modeling: carbon footprint / embodied energy
- LEED rating system(s)
- Sustainable Sites Initiative (SSI) rating system
- Low Impact Development (LID) standards