



53:086 Civil Engineering Materials
Spring Semester, 2008
Instructor: C.C. Swan

Optional Semester Project Assignment

Due: May 8th 2008.

In this project-type assignment, select an emerging civil engineering material system not explicitly covered in the class materials or in the textbook. Once you select the material system and perform some basic study on it, write a report (15 pages maximum!) that addresses the following issues:

1. What are the characteristics or aspects of this material system that make it potentially advantageous over more established systems?
2. Describe the physical and chemical characteristics of the material system.
3. How and where is the material actually fabricated?
4. What are the mechanical properties of the material? (stiffness, strength characteristics, ductility, mass density, thermal conductivity, electrical conductivity, variability in all of these properties)
5. What is the anticipated durability of the material system?
6. What is the relative life-cycle cost of this material system compared to the existing systems it might replace?
7. Can you identify any factors, unrelated to the actual merits or lack thereof for this materials system, which would present barriers to its being used in practice? Examples here would be: (1) general lack of familiarity with the system by engineers; (2) lack of design codes for this material system; etc.

In addressing all of the above issues, be as specific as possible, and use examples if at all possible.

Your report should have the usual elements: title page, table of contents, body, and a detailed bibliography. It will be graded based not only on how well you address the seven issues identified above, but also on how **deeply and insightfully** you delve into the relevant details of the material system.