

### **Traffic Congestion/ Pedestrian Crossing**

Contributor: James N. Craddock  
Affiliation address: Civil Engineering  
Southern Illinois University  
Carbondale, IL 62901  
Telephone: (618) 453-7808  
FAX: (618) 453-7455  
e-mail: craddock@zeus.c-engr2.siu.edu

Type: Design Project  
Student Time: Three weeks  
Location: Take home

### **Summary**

This is intended to be used with engineering students in a first year course near the end of the semester. Students will work in small teams to study the problem and pose some conceptual design for a solution. The basic problem is the traffic congestion at an uncontrolled cross-walk due to high volume of pedestrians at peak demand times. An example is a college campus where pedestrian traffic peaks between classes. Students must study the problem, develop design goals and develop a conceptual design for a solution.

### **ABET Descriptors**

Engr. Sci. Content: First Year Engineering  
Type: Component, system  
Elements: Establish requirement, analysis, synthesis,  
Features: Creativity, open-ended, design methodology, formulate design  
problem statement.  
Constraints: Economics, safety  
Effort: Small teams

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**SALUKI ENGINEERING COMPANY**  
**1234 S. Illinois Ave.**  
**Carbondale, IL 62901**

From : James N. Craddock  
Vice-President for Engineering

To: Transportation Engineering Staff

Subject: **Traffic Congestion/ Pedestrian Crossing**

The traffic control division of Southern Illinois University has requested that our company conduct a study of traffic congestion on the campus. They report that due to the high volume of pedestrian traffic between the Engineering Building and Neckers Hall, particularly during the ten minute breaks between classes ( e.g. 9:50 - 10:00 A.M.), automobile traffic backs up in both directions.

You are to prepare a preliminary study in an effort to quantify this problem. Information is needed on how many people use the cross-walk and how badly does the traffic back up. Once this information is obtained, you are to propose a preliminary design for a method to eliminate or reduce this problem. Be sure to consider the needs of disabled people and/or bicyclists in your plan

The deliverables for this project will include:

1. Report on the current pedestrian and traffic situation.
2. A report outlining a proposed solution to the problem. This report should discuss the general plan and any specifications that will be needed for the detailed design. Some cost estimates should be included.
3. A brief (15 minute) oral report about the selected design.

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### **Engineering Notes:**

1. Follow on assignments might include the same project with some more details. As an example, if a pedestrian bridge is selected, the actual bridge could be designed in structural analysis or steel design course. In a transportation or traffic engineering course some more detailed study of the problem could be done. Safety issues could be developed, such as compliance with any appropriate codes.
2. This project could lead to an introductory discussion of statistics in engineering design. Do we need to design for the peak demand or some average demand? Parallels to electric power demand could be made.
3. This project can be generalized to other examples such as large factories during shift changes. An example with a steadier flow is Las Vegas where several large 3500-5000 room hotels are located very near each other ( across the street or on opposite corners of an intersection).
4. Some computer simulation packages could be employed to model the traffic flow.