

COURSE NOTICE, SPRING 2010,

CE5409 -- Railroad Track Design and Engineering (3 CR – Tu, Th, 12:35- 1:55 pm)

Background

This 3 credit course introduces students to the design and development of construction documents for railroad track projects. The course takes a hands-on approach where assigned readings, interactive lectures, homework assignments and hands-on computer exercises will be applied by participants to complete a real-life rail project (course is beneficial for students interested in highway design as well). The course will require students to use teamwork and creative thinking to solve an open ended design challenge. The principles of track design will be immediately applied throughout the course to accomplish design exercises and case studies (and eventually real life design project) in the most prominent design software used by the industry; **MicroStation and Geopak**. By the end of the course, students will have a basic understanding in the fundamentals of the track components, track design elements, principles and criteria, the project flow and documents for track modification or construction projects, and in quantifying and estimating the basic project costs.

Prerequisites

While prior exposure to **civil design software** in preferential and **CE 4405 International Railroad Engineering** provides good basic knowledge, neither one is required to successfully complete the course.



Union Pacific Rail Yard: Portland, OR

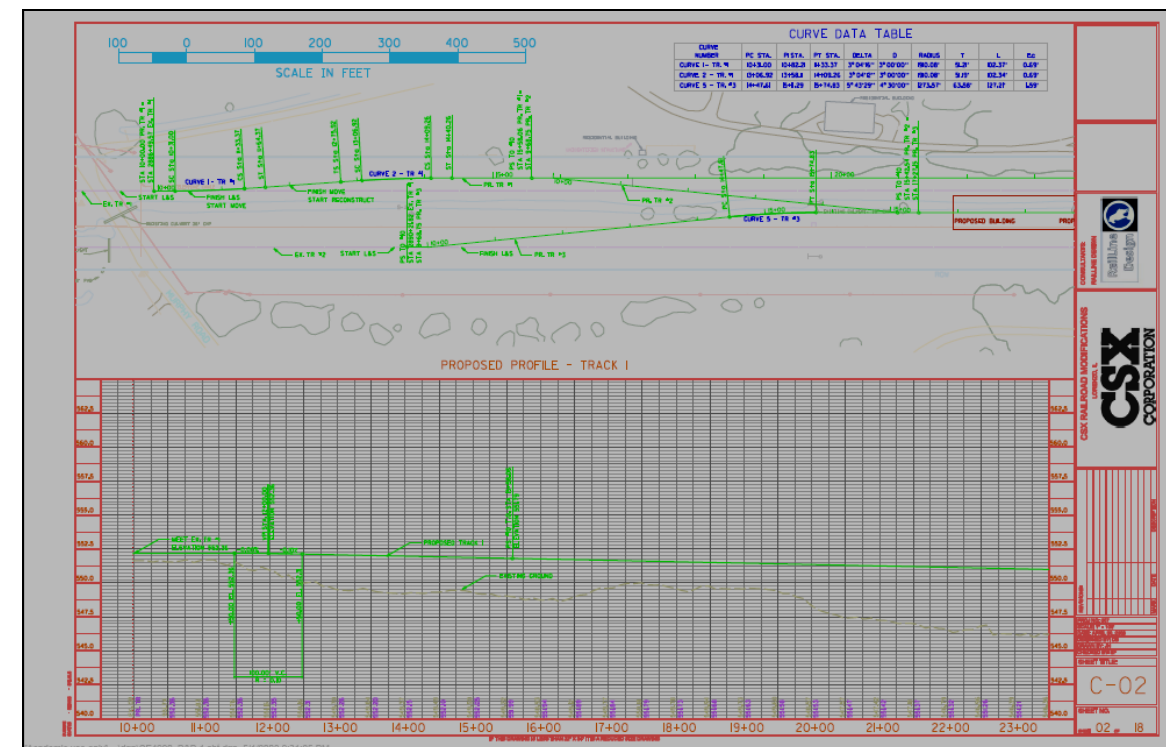
Instructor

This course will be taught by Dr. Pasi Lautala, Director of the Rail Transportation Program (RTP) and Research Assistant Professor at Michigan Tech Transportation Institute.

Topics Covered

This course will explore several topics related to railroad track modification or construction project with concentration on developing appropriate geometric design and construction documents. Topics will include:

- Track Design Principles (Vertical & Horizontal alignments)
- Different types of railway tracks and alignments
- Railway Cross Sections
- Drainage design & considerations
- Cost & Quantity estimations
- Utilization of Microstation and Geopak for track design
- Project flow / steps and important construction documents
- Railroad facility layout
- Industry guidelines and standards governing design and operation



Track Design Plan View in MicroStation (student design from 2008 class)

Job Opportunities

Railroad companies, consulting firms, government agencies, equipment manufacturers and suppliers are interested in engineers with knowledge of railroad operations and design components. **Prior knowledge and understanding how to use Microstation and Geopak are highly regarded qualities by the employers.**

Questions?

For more information, contact Pasi Lautala by email at plautal@mtu.edu , 487-4537, or stop by Dow 815