



Overview of RET Project #5

Simulation-Based Impact Analysis of Signalized Intersections

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Goal and Tasks

- Goal: provide the teachers with transportation research experience and resulted data for innovating their classroom teaching.
- Tasks:
 - The teachers will be first introduced to fundamentals of traffic theory and macroscopic simulation by using Highway Capacity Manual based software HCS.
 - For a selected intersection in Cincinnati, geometric data, field traffic flow data, signal phasing and timing data will be collected and input into HCS to investigate what variables impact traffic delays.
 - As an optional activity, the teachers will learn measuring Carbon Monoxide (CO) and estimating traffic contribution to ambient CO level.
 - Microscopic traffic simulation software VISSIM will be used to build a test bed to do what-if impact analysis. It can be further used to look at the operational efficiency effect and environmental effect of specific signal schemes.
 - Alternatives of signal plans and geometric improvements will be looked into and evaluated in VISSIM simulations, which aims to decrease the delay and CO emission.



Study Site

Clifton and MLK



UN



Simulation-based Analysis

- Mimic how the real-world system works and provide visualization to the users.
- Can output performance measures of traffic system for evaluation.
- To answer “what if” questions (*Impact Analysis – no need to do field test*)
- Need of animation (Seeing is believing!)





Project Outline

Field Trip to ARTIMIS

Field trip will be scheduled for better understand mobility reliability with live observations in the Cincinnati traffic information center.



Route Information

As of: 1:05 PM 6/16/2009

This report is updated every 5 minutes, 24 hours per day, 7 days per week.

PriorityMessage

There are no priority messages at this time.

For I-75, between Exit 24, the Butler County Veterans Highway, SR 129, and Exit 7, the Norwood Lateral, SR 562.

This route is 15 miles in length.

Direction	Average Speed	Estimated Travel Time
Southbound	60 mph	15 minutes

Current Conditions:

There are no known problems or unusual delays.

Direction	Average Speed	Estimated Travel Time
Northbound	60 mph	15 minutes

Current Conditions:

There are no known problems or unusual delays.

ARTIMIS -

The Advanced Regional Traffic Interactive Management & Information System provides incident, congestion, and freeway management for the Cincinnati-Northern Kentucky Region.





Timeline and Resources

Timeline

- Week 1: Training on fundamental of traffic theory and traffic data collection
- Week 2: Traffic data collection and Analysis
- Week 3: Training on microscopic simulation software VISSIM
- Week 4: VISSIM test bed build-up
- Week 5: Conduct “what-if” analysis and set up hands-on examples for classroom implementation
- Week 6: Preparation of final presentation, final report, and summary

Resources

- Computer Labs
 - 860 Baldwin
 - 617 ERC
- GA's assistance:
 - Zhixia Li
 - lizx@mail.uc.edu
 - 513-484-2991
 - Zhuo Yao
 - yaozo@mail.uc.edu
 - 513-382-6110
- Field trip (ARTIMIS)
- Discussions with faculty and GAs

QUESTION?