TTP 289A: Pedestrian and Bicycle Transportation
Syllabus (9/26/11)

Fall 2011—4.0 Credits
Monday and Wednesday, 4 p.m. to 6 p.m., Wellman Hall, Room 203

Course Instructor: Dr. Robert Schneider (rjschneider76@gmail.com)
Faculty Sponsor: Dr. Susan Handy
Office Hours: Monday and Wednesday, 3 p.m. to 4 p.m. Wickson Hall, Room 2144

Course Background

Walking and bicycling are essential components of a sustainable transportation system. In response to growing concerns about personal mobility and safety, access to transit, equity between socioeconomic groups, air quality, public health, and other issues of community sustainability, many government agencies are developing plans to improve pedestrian and bicycle transportation.

Pedestrian and bicycle transportation are influenced by micro-scale elements of the built environment, such as sidewalks, bicycle lanes, traffic speeds, and roadway crossings, as well as by macro-scale characteristics, such as community-wide pathway systems and regional land use patterns. As a result, walking and bicycling issues bridge the disciplines of urban planning, urban design, and civil engineering.

This graduate-level course is structured to provide students with information about current practices in the pedestrian and bicycle transportation field. It will cover historical and institutional frameworks, benefits and obstacles to pedestrian and bicycle planning, policy development, perceived and actual safety, facility design, network development, and practical methods of estimating demand and evaluating walking and bicycling conditions. Students will be challenged to evaluate the existing methods critically and develop ideas for improving pedestrian and bicycle planning practices. The course will focus mainly on practices in the United States, though it will include examples of innovative international strategies.

The course will include lectures, guest speakers, field visits, and several assignments. Most classes will include a presentation by the course instructor. References from the reading list will also be discussed in class. To facilitate discussions, a group of two to three students will be selected to be the "Expert Panel" for the readings in the next class period. These students should be prepared to provide an overview and two discussion questions for the readings. As the "Expert Panel," the students may also field questions on the class topic from the rest of the students. Guest speakers (and panels of speakers) will be professionals working in local, regional, and state agencies, advocacy organizations, and academic settings who will provide a practical perspective on the issues discussed in class. When guest speakers are scheduled, the second half of the class period will be reserved for their presentation and discussion.

I am looking forward to a great term with all of you!
Bob

Readings and Class Participation

A different topic from the pedestrian and bicycle planning field will be covered each class session. The readings listed under each session below are required readings. Readings will be available from the class SmartSite (https://smartsite.ucdavis.edu, TTP 298A 005 FQ 2011). All students are expected to read all the assigned readings BEFORE class and to actively participate in the discussion. A separate list of references titled, "Important References for Pedestrian and Bicycle Transportation Planners," (called "Other References List" on the SmartSite) will also be posted online.

Active participation in class is an important component of this course. Being able to express concepts and opinions clearly and ask good questions are critical skills in the professional world. Class attendance will be recorded on a sign-in sheet. However, class participation grades are based on the quality of active participation in class discussion, not simply on attendance. In the interest of promoting a productive learning environment for all, please:

- Arrive on time and stay for the duration of class.
- Turn off or mute audible cell phones, pagers, and watch alarms for the duration of class.
- Turn off laptops unless instructed otherwise and refrain from accessing the internet on any other device during class.

Behaviors that detract from class learning will be penalized in the class participation grade.

Class Assignments

The three assignments are designed to give practical experience with elements of the non-motorized transportation realm, including political, research, and design aspects. All work should have a practical focus. For example, work should be done with the intention of presenting findings to planners and engineers at a municipal agency or distributing the results to members of the Association of Pedestrian and Bicycle Professionals. All assignments should be submitted electronically to rjschneider76@gmail.com by midnight on the due dates listed. The assignments are described below.

Assignment #1: Attend a local transportation meeting and turn in a 2-page summary memo (Due Friday, October 14th)

This assignment is designed as an introduction to the political realm of decision-making. The final product should be a two-page, single-spaced memorandum in a standard memo form with a meeting summary and analysis. You should address the memo to a staff or advocacy member/organization (real or fictitious) of your choice. The final memo should be submitted as a Microsoft Word document so that comments can be provided in Track Changes. Your memo should contain the following three sections:

- A very brief description of the role and function of the organization whose meeting you attended (about 1 paragraph)
- A short summary of the purpose of the meeting and the specific topics discussed. If the agenda included a large number of items you may choose to focus on one or two key topics. (1 to 2 paragraphs)
- Your detailed comments on the following question: What did this experience teach you about citizen participation and public decision-making with regard to bicycle and pedestrian planning? (1 to 1.5 pages)

Before attending the meeting, skim a few background materials about the group sponsoring the meeting and any reports and analyses prepared specifically for the meeting. Also obtain and review any materials that are handed out or presented at the meeting. Examples of appropriate meetings include:

- City of Davis Bicycle Advisory Commission Meeting (Mon., Oct. 3rd, 5:30 pm)
- City/County of Sacramento Bicycle Advisory Committee Meeting (Tue., Oct. 11th, 6:00 pm)

- Sacramento Area Council of Governments (SACOG) (Thu., Sep. 29th, 10:00 am)
- Any other meeting of local municipalities or the Sacramento Area Council of Governments that has a bicycle or pedestrian issue on the agenda (*ask instructor first to check*)

Assignment #2: Paper on Topic of Choice
(Proposal Due Friday, October 7th; Final Paper Due Friday, October 28th)

This assignment will involve researching and synthesizing a pedestrian and/or bicycle topic of interest. It provides an opportunity to showcase prior experience or a chance to pursue a subject of particular interest. The result should be an 8- to 10-page (maximum), double-spaced paper. A brief (half-page) project proposal or outline will be due on Friday, October 7th. The instructor may provide guidance on how to refine or narrow the topic based on this proposal. The paper will be due Friday, October 28th. Both the proposal and final paper should be submitted as a Microsoft Word documents so that comments can be provided in Track Changes. Possible project topics include, but are not limited to:

- Detailed description of past experience working with non-motorized transportation, and lessons learned
- Evaluation of a local, small-area pedestrian and bicycle plan (roadway corridor or neighborhood)
- Profile of innovative city and its work to increase pedestrian and bicycle mode share and safety
- Photographic essay and summary of a specific pedestrian or bicycle facility design issue (e.g., median islands, bicycle lane design approaching intersections, "road diets", etc.)
- Summary of existing research on a category of factors related to pedestrian or bicycle activity (e.g., land use, transportation facilities, socioeconomic characteristics, weather, topography, individual attitudes, social norms, or perceptions of safety and security)
- Analysis of an existing source of pedestrian or bicycle use, safety, user characteristics, or facility data (American Community Survey Commuting Data, National Household Travel Survey, Statewide/Regional Crash Databases, International Databases, etc.)

Assignment #3: Intersection Analysis
(Proposal Due Friday, October 21st; Final PowerPoint & Documentation Due Friday, December 2nd)

The intersection analysis should be conducted in groups of 3-4 students, and it will involve planning, design, and engineering skills. The goal of the assignment is to recommend, illustrate, and justify a set of pedestrian and bicycle improvements at and near an intersection in the City of Davis or other city in the Sacramento region. Project limits will include the intersection plus the street segments approaching the intersection (e.g., a four-way intersection includes four approach legs—design of the intersection approaches may be even more important for pedestrian and bicyclist safety and convenience than the intersection itself). Groups should choose an intersection where improvements are needed, not one that already accommodates pedestrians and bicyclists fairly well. The project will involve several field visits, so an accessible location is very important.

The final product will be a 15-minute presentation (plus 10 minutes for questions) that is delivered during the last week of class. Time limits on presentations will be strictly enforced. The presentation should be given from a carefully-constructed PowerPoint file. This PowerPoint file will be the main product of this assignment, but it should be accompanied by necessary supporting documentation. Required components of the project to be included in the final presentation include:

- A brief discussion of why this intersection should be improved for pedestrians and bicyclists.
- An illustration of the current design of the intersection and approaching street segments in plan view, including key roadway and sidewalk measurements.
- An illustration of the cross-section existing conditions on at least one of the approaches, including key roadway and sidewalk measurements.

- Two-hour traffic counts for autos, pedestrians, and bicyclists during a morning or afternoon "peak" travel period.
- An illustration of the proposed redesign of the intersection and approaching street segments in plan view, including key roadway and sidewalk measurements.
- An illustration of the cross-section of the proposed redesign of at least one of the approaches, including key roadway and sidewalk measurements.
- Multimodal level of service analysis of pedestrian, bicycle, and automobile level of service (from Highway Capacity Manual, 2010) on one of the intersection approach streets under 1) existing conditions and 2) redesigned conditions.
- Rough, order-of-magnitude cost estimates for the improvements.
- Other education or enforcement strategies that may complement the physical changes.
- Justification of the design changes: 1) appropriate for surrounding roadway and land use context (e.g., does the improvement improve route network connectivity, access to transit, a connection between activity centers?), 2) improves suitability for all roadway users without significant deterioration of conditions for a certain user group, 3) reduces crash risk, 4) is not excessively costly, 5) recommendations from previous pedestrian or bicycle plans, etc.
- Challenges to implementing the recommendations: 1) citizens or groups who may oppose changes, 2) physical design constraints, 3) cost constraints, etc.
- Future phases of the project that could be completed with more public support and funding.

One member from each group should email the instructor with the group members' names and the proposed intersection before Friday, October 21st. The final group presentations will be given in class on Monday, November 28th and Wednesday, November 30th. These presentations will be delivered professionally, as they would be given to public agency staff and elected officials. The final PowerPoint presentation plus supporting documentation for cost estimates, level of service analysis, and other conclusions should be submitted by Friday, December 2nd. Grading will be done based half on the formal presentation and half on the final materials submitted.

Note that accuracy will be more important than precision in this exercise; i.e., it is more important to demonstrate knowledge of the difference in magnitude of costs between various infrastructure types, rather than know exactly how much each type costs. In addition, Illustrations should include key dimensions, such as street and lane widths, to communicate the existing conditions and proposed changes accurately, but they do not need to be developed using special software. Base aerial photos from Google Earth plus PowerPoint illustrations are sufficient for this project. AutoCAD and other design software is optional.

Grading

Grades will be given on an A to F scale based on the following components of the class:

- Overall class attendance and participation (15%)
- Assignment #1: Memo summarizing agency pedestrian or bicycle meeting (10%)
- Assignment #2: Paper on topic of your choice (30%)
- Assignment #3: Group intersection analysis project (45%)

Assignments are due by midnight on the dates listed above. Each calendar day late will result in loss of one grade (i.e., an "A" assignment will be given a "B"). A paper received at 12:01 a.m. on the day after the due date is considered one day late.

Class Topics and Reading List

Class 1: Pedestrian and Bicycle Transportation Institutions (History and Policy Frameworks) (9/26/11)

1.1. US Department of Transportation. *The National Bicycling and Walking Study: 15-Year Status Report*, Federal Highway Administration, Washington, DC. Available online: http://katana.hsrc.unc.edu/cms/downloads/15-year_report.pdf, 2010.

1.2. US Department of Transportation. "United States Department of Transportation Policy Statement on Bicycle and Pedestrian Accommodation Regulations and Recommendations," Signed on March 11, 2010 and Announced on March 15, 2010, Available online: http://www.fhwa.dot.gov/environment/bikeped/policy_accom.htm, 2010.

1.3. Associated Press. "Senate Agrees to Extend Aviation, Highway Programs, Averting Another Shutdown of the FAA," *Washington Post*, Available online: http://www.washingtonpost.com/business/democrats-accuse-gop-senator-of-brinksmanship-as-faa-shutdown-draws-near-in-senate-standoff/2011/09/15/gIQAcAEJVK_story.html, September 16, 2011.

1.4. League of American Bicyclists. "Time to Take Action — A Major Attack on Bicycle Funding," Blog post by Andy Clarke, Available online: http://www.bikeleague.org/blog/2011/09/get-ready-to-take-action-a-major-attack-on-bicycle-funding/, September 8, 2011.

Class 2: Trends in Pedestrian and Bicycle Transportation (9/28/11)

2.1. Pucher, J., R. Buehler, and M. Seinen, "Bicycling Renaissance in North America? An Update and Re-Assessment of Cycling Trends and Policies," *Transportation Research A*, Vol. 45, No. 6, pp. 451-474, 2011.

2.2. Buehler, T. J. and S.L. Handy. "Fifty Years of Bicycle Policy in Davis, CA," *Transportation Research Record 2074*, 2008.

2.3. McDonald, N.C., A.L. Brown, L.M. Marchetti, M.S. Pedroso, "U.S. School Travel 2009: An Assessment of Trends," *American Journal of Preventive Medicine,* Vol. 41, No. 2, pp. 146-151, August 2011.

No Class on 10/3/11. *Option for Assignment 1: Attend Davis Bicycle Advisory Commission Meeting, 5:30*

Class 3: Benefits of Pedestrian and Bicycle Transportation (10/5/11)

3.1. Gotschi, T., and K. Mills. *Active Transportation for America: The Case for Increased Federal Investment in Bicycling and Walking*, Rails-to-Trails Conservancy and Bikes Belong, Available online: http://www.railstotrails.org/resources/documents/whatwedo/atfa/ATFA_20081020.pdf, 2008. (pp. 3-17)

3.2. Gotschi, T. "Costs and Benefits of Bicycling Investments in Portland, Oregon," *Journal of Physical Activity and Health*, Volume 8, Supplement 1, pp. S49-S58, 2011.

3.3. Litman, Todd. "Economic Value of Walkability," Victoria Transportation Policy Institute, *Transportation Research Record 1828*, 2003.

3.4. Centers for Disease Control and Prevention. U.S. Obesity Trends: Trends by State, 1985-2010. *Overweight and Obesity*, Available online: http://www.cdc.gov/nccdphp/dnpa/obesity/trend/maps/index.htm, Accessed September 5, 2011.

>>>Paper Topic for Assignment #2 due on Friday, 10/7/11.

Class 4: Travel Behavior: Shifting Automobile Travel to Walking and Bicycling (10/10/11)

4.1. Schneider, R.J. "Theory of Routine Mode Choice Decisions," Chapter 7 in *Understanding Sustainable Transportation Choices: Shifting Routine Automobile Travel to Walking and Bicycling*, A dissertation submitted in partial satisfaction of the requirements for the degree of Doctor of Philosophy in City and Regional Planning, University of California, Berkeley, pp. 179-194. Available online: http://www.uctc.net/research/UCTC-DISS-2011-01.pdf, Spring 2011. (pp. 179-194)

4.2. Smith, P., M. Wilson, and T. Armstrong. "'I'll just take the car': Improving Bicycle Transportation to Encourage its use on Short Trips, New Zealand Transport Agency, NZ Transport Agency Research Report 426, Available online: http://www.nzta.govt.nz/resources/research/reports/426/docs/426.pdf, 2011. (pp. 114-120)

4.3. Dill J. and C. Mohr. Long term evaluation of individualized marketing programs for travel demand management, OTREC-RR-10-08, Available online, http://www.otrec.us/project/160, 2010. (pp. 25-37, 49-52)

Class 5: Pedestrian and Bicycle Safety: Crash Data and Risk Perceptions (10/12/11)

5.1. Jacobsen, P.L. "Safety in Numbers: More Walkers and Bicyclists, Safer Walking and Bicycling," *Injury Prevention*, Volume 9, pp. 205-209, 2003.

5.2. Bhatia, R. and M. Wier. "'Safety in Numbers' Re-examined: Can we Make Valid or Practical Inferences from Available Evidence?" *Accident Analysis and Prevention*, Volume 43, Number 1, pp. 235-240, 2010.

5.3. Schneider, R.J., M.C. Diogenes, L.S. Arnold, V. Attaset, J. Griswold, and D.R. Ragland. "Association between Roadway Intersection Characteristics and Pedestrian Crash Risk in Alameda County, California," *Transportation Research Record 2198*, Transportation Research Board, 2010.

5.4. Audirac, I. "Sharing Fast-Speed and Slow-Speed Roads with Bicyclists and Pedestrians: A Source of Female and Male Driver Frustration?" *Transportation Research Record 2067*, Transportation Research Board, pp. 65-74, 2008.

>>>Memo for Assignment #1 due on Friday, 10/14/11.

Class 6: Anatomy of a Pedestrian and Bicycle Plan (10/17/11)

6.1. Groups will be assigned one of the following plans to read and review:

A. City of Davis, CA. City of Davis Bicycle Plan, Available online: http://cityofdavis.org/bicycles/pdfs/Bike-Plan-2009.pdf, 2009.

B. Yolo County, CA. County of Yolo Bicycle Transportation Plan: Bicycle Routes and Priorities, Available online: http://www.yolocounty.org/Index.aspx?page=834, 2006.

C. City of Sacramento, CA. Sacramento Pedestrian Master Plan, Available online: http://www.cityofsacramento.org/transportation/dot_media/street_media/sac-ped-plan_9-06.pdf, 2006.

D. Sacramento Area Council of Governments. Regional Bicycle, Pedestrian, and Trails Master Plan, Available online: http://www.sacog.org/bikeinfo/pdf/masterplan/Regional%20BPT%20Master%20Plan%20FINAL%202011.pdf, 2011.

Small group discussion questions will include:

- Why did the agency develop the plan? (What motivated them to develop the plan?)
- What was your favorite part of the plan? What was the "strongest" part of the plan?
- What was your least favorite part of the plan? What was the "weakest" part of the plan?

Full class discussion will address:

- Common strengths & weaknesses (2-3 from each group)
- Differences between local and regional plans

Class 7: Pedestrian Design Fundamentals (10/19/11)

7.1. US Department of Transportation, Federal Highway Administration. *Designing Sidewalks and Trails for Access, Part I of II: Review of Existing Guidelines and Practices*, 1999. Available online: http://www.fhwa.dot.gov/environment/sidewalks/sidewalks.pdf. (skim pp. 31-69)

7.2. US Department of Transportation, Federal Highway Administration. *Safety Effects of Marked Versus Unmarked Crosswalks at Uncontrolled Locations*, FHWA-RD-04-100, Authors: Zegeer, Charles V., J. Richard Stewart, Herman Huang, and Peter Lagerwey, Available online: http://www.tfhrc.gov/safety/pubs/04100/index.htm, 2001. (pp. 1-11; pp. 51-61)

>>>Proposed intersection and group members for Assignment #3 due on Friday, 10/21/11.

Class 8: Bicycle Design Fundamentals (10/24/11)

8.1. Association of American State Highway and Transportation Officials, *AASHTO Guide for the Planning, Design, and Operation of Bicycle Facilities*, DRAFT for AASHTO committee review and comment. Available online, http://design.transportation.org/Documents/DraftBikeGuideFeb2010.pdf, 2010. (pp. 55-98)

Class 9: Pedestrian and Bicycle Facility Design Innovations and Cost Considerations (10/26/11)

9.1. National Association of City Transportation Officials. *NACTO Urban Bikeway Design Guide*. Available online: http://nacto.org/cities-for-cycling/design-guide/, 2011. (skim through several designs)

9.2. Synopsis of Jennifer Dill's research on bicycle lanes in Portland. http://www.portlandtribune.com/sustainable/story.php?story_id=122402296838932000 (read story and reader comments)

9.3. Fitzpatrick, K., S.T. Chrysler, R. Van Houten, W.W. Hunter, and S. Turner. *Evaluation of Pedestrian and Bicycle Engineering Countermeasures: Rectangular Rapid-Flashing Beacons, HAWKs, Sharrows, Crosswalk Markings, and the Development of an Evaluation Methods Report,* Federal Highway Administration, FHWA-HRT-11-039, Available online: http://www.fhwa.dot.gov/publications/research/safety/pedbike/11039/11039.pdf, April 2011. (skim pp. 13-50)

>>>Paper for Assignment #2 due on Friday, 10/28/11.

Class 10: Field Trip—Walking Audit to Davis High School Area (10/31/11)

10.1. U.S. Department of Transportation, Federal Highway Administration. *How to Develop a Pedestrian Safety Action Plan*, Available online: http://katana.hsrc.unc.edu/cms/downloads/howtoguide2006.pdf, March 2008. (skim document)

10.2. Clifton, K.J., A.D. Livi Smith, and D. Rodriguez. "The Development and Testing of an Audit for the Pedestrian Environment," *Landscape and Urban Planning*, Volume 80, 2007, pp. 95-110.

Class 11: International Pedestrian and Bicycle Transportation (11/2/11)

11.1. Pucher, J., J. Dill, and S. Handy. "Infrastructure, Programs, and Policies to Increase Bicycling: An International Review," *Preventative Medicine*, Volume 50, pp. S106-S125, 2010.

11.2. Buehler, R. and J. Pucher. "Cycling to Sustainability in Amsterdam," *Sustain: A Journal of Environmental and Sustainability Issues*, Fall 2009/Winter 2010, pp. 36-40, Available online: http://policy.rutgers.edu/faculty/pucher/amsterdam.pdf, 2010.

11.3. City of Copenhagen, Denmark. *Copenhagen City of Cyclists: Bicycle Account 2010*, Available online: http://www.cycling-embassy.dk/wp-content/uploads/2011/05/Bicycle-account-2010-Copenhagen.pdf, 2010.

Class 12: Pedestrian and Bicycle Data Collection and Performance Measures (11/7/11)

12.1. Schneider, R.J., L.S. Arnold, and D.R. Ragland. "A Methodology for Counting Pedestrians at Intersections: Using Automated Counters to Extrapolate Weekly Volumes from Short Manual Counts," *Transportation Research Record 2140*, pp. 1-12, 2009.

12.2. Alliance for Biking and Walking, *Bicycling and Walking in the United States: 2010 Benchmarking Report*. Available online, http://www.peoplepoweredmovement.org/site/index.php/site/memberservices/C529, 2010. (pp. 8-20)

12.3. City of Portland, OR. *Portland Bicycle Count Report 2010*, Available online: http://www.portlandonline.com/transportation/index.cfm?c=44671&a=327783, 2010.

Class 13: Segment-Based Pedestrian and Bicycle Suitability Assessment Methods (11/9/11)

13.1. Dowling, R., D. Reinke, A. Flannery, P. Ryus, M. Vandehey, T. Petritsch, B. Landis, N. Rouphail, and J. Bonneson. *Multimodal Level of Service Analysis for Urban Streets*, National Cooperative Highway Research Program Report 616, Transportation Research Board, Available online: http://onlinepubs.trb.org/onlinepubs/nchrp/nchrp_rpt_616.pdf, 2008. (pp. 1-16; pp. 82-91)

13.2. Gehl, J. *Public Spaces & Public Life Studies*, City of Adelaide, City Council, Australia, Available online, http://www.adelaidecitycouncil.com/adccwr/publications/reports_plans/public_spaces_public_life.pdf, 2002. (pp. 48-67)

Class 14: Intersection-Based Pedestrian and Bicycle Suitability Assessment Methods (11/14/11)

14.1. US Department of Transportation, Federal Highway Administration. *Pedestrian and Bicyclist Intersection Safety Indices: Final Report*, Authors: D.L. Carter, W.W. Hunter, C.V. Zegeer, R. Stewart, and H. F. Huang, Pedestrian and Bicycle Information Center, Available online: http://www.fhwa.dot.gov/publications/research/safety/pedbike/06125/, 2006. (p. 1; pp. 49-50)

14.2. Landis, Bruce W., Venkat R. Vattikuti, Russell M. Ottenberg, Theodore A. Petritsch, Martin Guttenplan, and Linda B. Crider. "Intersection Level of Service for the Bicycle Through Movement," *Transportation Research Record 1828*, Transportation Research Board, Washington, DC, 2003.

Class 15: Pedestrian and Bicycle Prioritization Methods (11/16/11)

15.1. Goodman, D., R. Schneider, and T. Griffiths. "Put Your Money Where the People Are," *Planning*, June 2009.

15.2. City of Alexandria, VA. *City of Alexandria Pedestrian and Bicycle Mobility Plan*, "Appendix I: Prioritization of Recommended Improvements," Available online: http://www.alexandriava.gov/uploadedFiles/localmotion/info/gettingaround/Appendix_060108.pdf, 2008.

Class 16: In-Class Group Project Work and Question Session (11/21/11)

16.1. Transit Cooperative Research Program. *Synthesis 62: Integration of Bicycles and Transit*. Transportation Research Board, Consultant: Robert Schneider, Toole Design Group, LLC., Available online: http://www.trb.org/news/blurb_detail.asp?id=5615, 2005. (pp. 11-17)

16.2. Federal Highway Administration. *Pedestrian Safety Guide for Transit Agencies*, FHWA-SA-07-017, Authors: D. Nabors, R. Schneider, D. Leven, K. Lieberman, C. Mitchell, Available online: http://www.walkinginfo.org/training/collateral/resources/transit_guide.pdf, February 2008. (Read p. 1, and skim the rest of the document)

Class 17: Pedestrian and Bicycle Demand Estimation Methods (11/23/11)

17.1. Schneider R.J., L.S. Arnold, and D.R. Ragland. *Validation Testing and Refinement of the Alameda County Pedestrian Intersection Crossing Volume Model*, UC Berkeley Traffic Safety Center White Paper, Presented at the Association of Collegiate Schools of Planning Conference Arlington, Virginia, Available online: http://www.safetrec.berkeley.edu/research/pedbikemodeling/SchneiderArnoldRagland_AlamedaCountyPedestrianVolumeModelValidation_ACSP_Oct2009.pdf, October 2009.

17.2. Griswold, J.B., A. Medury, and R.J. Schneider. "Pilot Models for Estimating Bicycle Intersection Volumes," *Transportation Research Record*, Transportation Research Board, Forthcoming, 2011.

Class 18: In-Class Presentations of Class Projects/Course Wrap-Up (11/28/11)

Class 19: In-Class Presentations of Class Projects/Course Wrap-Up (11/30/11)

>>>Presentation and supporting documentation for Assignment #3 due on Friday, 12/2/11.