

# CURRICULUM VITAE

## **DINGXIN CHENG, Ph.D., P.E.**

Assistant Professor  
Department of Civil Engineering  
California State University, Chico

---

### **EDUCATION**

- Ph.D.** Transportation and Pavement Material Division, Department of Civil Engineering, Texas A&M University, College Station, TX; September 1999 – December 2002.
- M.S.** Department of Civil Engineering, The University of Toledo, Toledo, OH; September 1998 – August 1999.
- M.S.** Institute of Civil Engineering, Northeastern University of China, ShenYang, LiaoNing, China, September 1991 – April 1994.
- B.S.** Institute of Civil Engineering, Northeastern University of China, ShenYang, LiaoNing, China, September 1987 – August 1991.

### **LICENSES**

- P.E., #94608, State of Texas
- TxDOT certified engineer in Planning and Traffic Engineering categories

### **PROFESSIONAL AFFILIATION AND MEMBERSHIP**

- Member of the Institute of Transportation Engineers (ITE)
- Member of the Transportation Research Board (TRB)
- Member of the American Society of Civil Engineers (ASCE)
- Member of Sigma Xi, the Scientific Research Society (Sigma Xi)

### **TEACHING EXPERIENCES**

- Assistant Professor, Department of Civil Engineering, California State University, Chico, August 2006 to present.
- Guest Lecture at the Northern Jiaotong University, Beijing, China. Using State-of-the-art Traffic Modeling Techniques to Solve Large-Scale Freeway Construction Programs. December 2003.

- Guest Lecture at the Texas A&M University – College Station. CVEN689 Special Topics in Civil Engineering. The Mechanisms of Microdamage Healing of Asphalt Concrete Based on Micromechanics. November 2002.
- Graduate Teaching Assistant at the Texas A&M University – College Station. CVEN421 Civil Engineering System I - Probability and Statistics for Civil Engineers. September 1999 – December 1999.

## SELECTED PUBLICATIONS OR REPORTS

- **Cheng, D.**, *Scrub Seal Testing Sections Highway 178*, East of Ridgecrest, CA, June 2007.
- **Cheng, D.**, T. Ferrara, *Site Traffic Impact Analysis 6930 Skyway Developments*, Paradise, CA, February 2007.
- **Cheng, D.**, Z. Tian, and C.J. Messer, *Development of an Improved Cycle Length Model over the HCM 2000 Quick Estimation Method*, Journal of Transportation Engineering, Volume 131, Issue 12, pp. 890-897, December 2005.
- **Cheng, D.**, S.G. Wegmann, *Three Close-Spaced Signals Optimization*, Paper published at the 2004 Fall Texas ASCE Proceeding, Woodland, TX, October 2004.
- **Cheng, D.**, *Supporting Large-Scale Urban Freeway Construction Using Traffic Simulation*, The 2004 EP Technical Papers, Professional Growth Network, September 2004.
- **Cheng, D.**, J.A. Mullins III, D.L. Bacon, and P.C. Simmons, *Traffic Impact Study of a Large-Scale Urban Freeway Reconstruction Program*, The 2004 Annual Meeting and Exhibit Compendium of Technical Papers, Lake Buena Vista, FL, August 1-4, 2004.
- **Cheng, D.**, W.H. Kraft, and C.L. Dudek, *Lessons Learned and Findings on Freeway Transportation Management Center Building Design*, The 2003 Annual Meeting and Exhibit of the Institute of Transportation Engineers, Seattle, WA, USA, August 24-27, 2003.
- **Cheng, D.**, D.N. Little, R.L. Lytton, and J.C. Holste, *Moisture Damage Analysis of Asphalt-Aggregate Mixture by Considering Both Diffusion and Repeated Load Conditions*, Journal of the Transportation Research Record No: 1832, PP. 42-49, 2003.
- **Cheng, D.**, C.J. Messer, Z. Tian, and J. Liu, *Modification of Webster's Minimum Delay Cycle Length Equation Based on HCM 2000*, the 81<sup>st</sup> 2003 Annual Meeting of the Transportation Research Board in Washington, D.C., January 2003.
- **Cheng, D.**, *Surface Free Energy of Asphalt-Aggregate System and Performance Analysis of Asphalt Concrete Based on Surface Free Energy*. A Ph.D. Dissertation at Texas A&M University, College Station, TX, U.S.A., 2002.
- **Cheng, D.**, *Development of Guidelines for Designing a Freeway Transportation Management Center Building*, Compendium: Papers on Advanced Surface Transportation Systems, PP. 1-31, 2002.

- **Cheng, D.**, D.N. Little, R.L. Lytton, and J.C. Holste. *Surface Energy Measurement of Asphalt and its Application to Predicting Fatigue and Healing in Asphalt Mixtures*. Journal of Transportation Research Record No: 1810, PP. 44-53, Transportation Research Board, 2002.
- **Cheng, D.**, D.N. Little, R.L. Lytton, and J.C. Holste. *Use of Surface Free Energy Properties of the Asphalt-Aggregate System to Predict Moisture Damage Potential*. Journal of Association of Asphalt Paving Technologists, Vol. 71, PP. 59-88, Association of Asphalt Paving Technologies, 2002.
- **Cheng, D.**, D.N. Little, R.L. Lytton, and J.C. Holste. Impact of Surface Energies of Bitumen and Aggregate Components on the Fatigue Properties of Asphalt Concrete Mixtures. 25<sup>th</sup> Annual Meeting of the Adhesion Society, 2002.
- **Cheng, D.**, D.N. Little, R.L. Lytton, and J.C. Holste. *Surface Free Energy Measurements of Aggregates and its Application on Asphalt-aggregate Systems*. 9<sup>th</sup> Symposium of International Center for Aggregates Research, 2001.
- **Cheng, D.**, *A Knowledge-based Database System for Soil Constitutive Models*, A M.S. Thesis at University of Toledo, Toledo, U.S.A., August 1999.
- **Cheng, D.**, W. Zhao, and Y. Lin. *Control of the Underground Pressure at Wulong Gold Mine by Filling the Upper empty Room*. Journal of Mining and Metallurgical Engineering, China, April 1995.
- Zhou, Y., **D. Cheng**, L. Cheng, and H. Cao. *The Effect of Curing Period in Soil Anchorage in Huaxin Plaza of Tianjin*. Rock and Soil Anchoring Engineering, Volume 3, China, December 1994.
- L. Cheng, Y. Zhou, H. Cao, and **D. Cheng**. *The Application of Soil Anchorage of Tianjin*. Rock and Soil Anchoring Engineering, Volume 3, China, December 1994.
- **Cheng, D.**, *Computer Modeling of Underground Stress of Wulong Golden Mine*. A M.S. Thesis at Northeastern University of China, ShenYang, LiaoNing, China, April 1994.

## SELECTED INVITED SPEECH AND PRESENTATIONS

- Caltran's Treatment Selection, Presented at the professor training workshop at the National Center for Asphalt Technologies (NCAT), June 2007.
- Three Closely Spaced Signals Optimization, Presented at the Fall 2004 Texas ASCE Conference, Woodland, TX, October 2004.

- Traffic Impact Study of a Large-Scale Urban Freeway Reconstruction Program, Presented at the 2004 Annual Meeting and Exhibit of the Institute of Transportation Engineers, Lake Buena Vista, FL, August 2004.
- Lessons Learned and Findings about Freeway TMC Building Design, Presented at the 2003 Annual Meeting and Exhibit of the Institute of Transportation Engineers, Seattle, WA, August 2003.
- Moisture Damage Analysis of Asphalt-Aggregate Mixture by Considering Both Diffusion and Repeated Load Conditions, Presented at the 82nd Annual Meeting of the Transportation Research Board, Transportation Research Board, Washington, D.C, January 2003.
- Modification of Webster's Minimum Delay Cycle Length Equation Based on HCM 2000, Presented at the 82nd Annual Meeting of the Transportation Research Board, Transportation Research Board, Washington, D.C., January 2003.
- Surface Energy Measurement of Asphalt and its Application to Predicting Fatigue and Healing in Asphalt Mixtures, Presented at the 81<sup>st</sup> Annual Meeting of the Transportation Research Board, Transportation Research Board, Washington, D.C., January 2002.

## **HONORS AND AWARDS**

- EP Technical Paper Competition Highly Recommended, first place in the U.S., by Parsons Brinckerhoff Professional Growth Network, 2004.
- R&I Research Awarded Proposal, Real Time Pricing Strategy for HOT Lanes, by Parsons Brinckerhoff Research and Implementation Committee, 2004.

## **COMPUTER SKILLS**

TRANSCAD, EMME2, CUBE, MAPINFO, VISUAL BASIC, Microstation, GeoPaK, AutoCAD, VISSIM, VISUM, CORSIM, INTEGRATION, PASSER II, PASSER III, SYNCHRO/SIMTRAFFIC

## **WORKING EXPERIENCES**

### **California State University, Chico,**

Assistant Professor, California State University, Chico, August 2006 – Present.

Senior Pavement Engineer, California Pavement Preservation Center, May 2007 – Present.

- Continuing Education and University Curricula for RAC and CE Applications of Waste Tire. He works as project manager in charge of administration, development of teaching modules, and delivering the courses and providing training workshops. Jun 2007 - Present.

- Development of a Pavement Preservation Management System, Chico, CA. He worked on the developing procedures, writing reports, and coaching students to work on the research project. June 2007 - Present.
- Editing and Reviewing Caltrans MTAG, Chapters 1 and 3, CA. He helped to review and revise a new version of Maintenance Technical Advisory Guide of Caltrans. June – August 2007.
- Development of Generic Specifications for Rejuvenating Seals Using Performance Based Properties, CA. He participated the meetings, site investigation, and helped to write draft reports. June- July 2007

**Parsons Brinckerhoff, Inc.**

Transportation Engineering Consultant, Houston, TX, January 2003 – Present.

- Missouri City Transportation Management Plan, Missouri City, TX. He is primary engineer developing a travel demand model and transportation network for the City of Missouri for its Transportation Management Plan. He programmed travel model for Missouri City using travel demand modeling software CUBE. He also created detailed travel modeling network for the city based on city land development plan and demographic data. After validating the model with traffic counts, he prioritized and ranked future projects within Missouri City by using H-GAC MPO model procedures. (Project number: 31098; Task number: 06.01; Date: Oct 2005 – Present)
- I-5 Management Lane Corridor Study, San Diego, CA. He was primary engineer conducting travel demand modeling on different future planning years. The access points of future management lanes with I-5 freeway mainlanes were analyzed in details. He also conducted subarea analysis and select link analysis on the portion of I-5 corridor with the management lanes. He also prepared Origin-Destination trip table for further detailed simulation analysis. (Project number: 70597A; Task number: 1.2PBQD; Date: Jun 2005 – July 2005)
- Lane Cove Tunnel – Pacific Highway Exit Ramp traffic operation analysis, Australia. He was primary engineer performing traffic simulations on different geometric design alternatives on the offramp from main Lane Cove Tunnel to the Pacific Highway and exclusive transit lane. He obtained and compared the Measurements of Effectives of different alternatives using VISSIM. (Project number: 24329A; Task number: 2111993A; Date: Dec 2005 – Jan 2006)
- City of Palm Spring General Plan, Palm Spring, CA. He was primary engineer responsible for the development of subarea analysis. He reviewed demographic and land use information. He refined the zonal structure within the study area. He also developed more detailed transportation network. (Project Number: 12672; Task Number: 2.5.1; Date: May 2005 – Jun 2005)
- Austin Loop 1 HOT Lane Corridor Study, Austin, TX. He was primary engineer responsible for travel demand analysis for the Loop 1 HOT lane project during the future year 2017 and

2030. He programmed an interface for highway network creation, 24 hour/peak hour matrix calculation, HOV-user equilibrium assignments using TransCAD GISDK script language. He reviewed Loop 1 Microstation design file. He ran Austin CAMPO model to obtain the mode choice results for different analysis alternatives. (Project Number: 22309C; Task Number: 6.3.3; Date: Dec 2004 – Dec 2005)

- Neuces County Road Rehabilitation Project, Corpus Christi, TX. He is responsible for calculating the quantities for the project. Major tasks are reviewing and calculating pavement design, SW3P, Sign and Pavement Marking, materials, etc. (Project Number: 31096; Task Number: 99.1; Date: Mar 2004 – April 2005)
- Houston Grand Parkway Segments Toll or Freeway alternatives analysis for H-GAC, Houston, TX. He is primary engineer responsible for modeling segments of Grand Parkway (SH99) as toll way or freeway options. All modeling runs made use of H-GAC's draft final 2025 RTP modeling network as well as TAZ-level 2025 demographic data used in the development of the 2025 RTP. SH99 contains 10 segments. The different toll or freeway analysis for different alternatives including no build, all toll, all freeway, toll of each segment, and freeway of each segment were modeled and analyzed. The primary model runs were conducted using H-GAC EMME2 software. TransCAD and ArcView were also utilized during the analysis. (Project Number: 31094p1; Task Number: c-1 and d-1; July 2004 – Nov 2004)
- US 69 Traffic Analysis for the Segment in Hardin County for TxDOT, Hardin County, TX: primary engineer responsible for traffic alternative analysis for the extension of SH327 for the year 2025. After obtained the year 2025 calibrated travel demand base model for the Beaumont District of TxDOT, he checked the TransCAD network, especially the portion of network along the US 69 corridor within the Hardin County. He created the proposed alternative network, which is the extension of SH327 west to the preferred alternative of the US 69 Corridor Study. He performed TransCAD modeling runs for both the no build scenario and the extension of SH327 alternative scenario. The traffic volume changes at each street and intersection were calculated using TransCAD. The traffic volume, volume-capacity ratio, and function class for each link at before and after scenarios were presented in Maps and tables. (Project Number: 22249; Task Number: 870; Sept 2004 – Nov 2004)
- Traffic modeling for the IH-10 Katy Freeway Reconstruction Project for TxDOT in Houston, TX. He was primary engineer working on this traffic modeling project. The IH-10 Katy Freeway modeling network is about 23 miles long, has 4 HOT lanes from SH 6 to IH-610 West Loop, has at least 6 lanes for the frontage roads and another 8-10 lanes for the freeway main lanes. For the purpose of calibration, a base year 2000 peak hour networks were established not only for freeway but also including the surface streets within 5 miles north/south of freeway. The networks were firstly transferred from the H-GAC regional demand model and then updated for intersection signals or other traffic control devices. The Origin-Destination matrix for the simulation model is created from a sub-area matrix of the year 2000 H-GAC regional demand model and corrected based on traffic counts. After the model is calibrated with the traffic counts, the simulation networks were modified for the construction year 2006 – 2008. The impact of the major construction activities such as

closures of interchange direct connector, ramp closures, were estimated from the simulation model and the mitigation plan were proposed. (Project Number: 22500A; Task Number: A-110a.1; Date: Jan 2003 – Aug 2004)

- Three closely spaced signals optimization: primary engineer for developing a new signal phasing and optimization method for three closely spaced signalized intersections for the Gessner RD at Katy Freeway. Collaborating with TxDOT employee, DingXin developed a new signal timing and optimization method based on a modification of PASSER III logic and the Webster's minimum delay theory. (Project Number: 22500A; Task Number: A-110a; Apr 2004 – Sept 2004)
- Select Link Analysis for Spur 527, Houston, TX. He was a primary engineer responsible for a select link analysis for closing of Spur 527 toward the downtown of Houston. He performed multi-model traffic assignment with and without the closure of Spur 527 using H-GAC 2007 regional travel demand modeling network. The detouring trips that originally used Spur 527 were clearly traced during the closure of Spur 527 by using the Select Link Analysis method. (Project Number: 5589; Task Number: 5589; May 2004)
- Traffic Analysis for the Campbell road and Blalock road at IH-10 Katy freeway for TxDOT. He was a primary engineer for this traffic study. Due to the complexity of construction, there exists a time period that there will be three close-space intersections along Campbell road and Blalock road. After comparing the pro and cons of different alternatives, the three signals were recommended for the Campbell road and Blalock road. DingXin developed a highly coordinated signal timing and phasing plan for the proposed three close-space signal system during this study. (Project Number: 22500A; Task Number: A-110.a; Feb 2004 – Mar 2004)
- The Lane Cove Tunnel project in Australia. A traffic simulation study is performed to help to select the better vertical profile alternatives for the tunnel. The traffic operation parameters, such as travel time, speed, as well as fuel consumption, emission pollution were calculated and used for the analysis. (Project Number: 24329A; Task Number: 2111911A; Feb 2004 – Mar 2004)
- State Highway 6 at Park Row Traffic Analysis: primary engineer for the detailed traffic analysis for the diamond interchange of SH 6 and Park Row. He was a primary engineer for this traffic study. By using traffic analysis software Synchro and simulation software VISSIM, DingXin demonstrated the proposed alternative is more operational efficient than the existing design. (Project Number: 22500A; Task Number: A-110a; Oct 2003 – Nov 2003)
- Eldridge adding Right Lane LOS and Delay analysis: primary engineer for calculating the delay and Level of Service of intersections of diamond interchange of Eldridge at Katy Freeway. DingXin was a primary engineer for this traffic study. He calculated and compared the results between adding a right turn only lane and no adding the right turn lane. The measurements of effectiveness results were used to make further recommendations. (Project Number: 22500A; Task Number: A-110a; Sept 2003)

- Laredo bridge traffic analysis: supporting engineer to provide the impact for a proposed new Laredo Bridge. DingXin calculated the delay and LOS at the intersection of US 83 and the proposed Outer Loop of the city of Laredo, TX. DingXin compared different geometric design options (Project Number: 22330; Task Number: A700; Apr 2003)

### **Texas Transportation Institute**

Graduate Research Assistant, Texas A&M University System, College Station, TX, January 2000 – December 2002.

- Developed a traffic signal optimal cycle length model for isolated signalized intersections
- Developed and validated surface energy of adhesion model for asphalt concrete
- Conducted research on surface energy and adhesion properties of asphalt-aggregate systems
- Performed pavement material testing and mix design using Superpave methods
- Conducted fatigue analysis including the healing effects of asphalt pavements
- Attended Advanced Institute, Transportation System Operations, and Management
- Designed the signalized intersection of Bonfire Avenue at Aggie Road
- Performed the geometric design of the interchange of Wellborn Road at George Bush Drive
- Performed traffic counting and data analysis for TAMU ITE and the city of College Station
- Performed Ground Penetration Radar (GPR) on asphalt pavement
- Performed Falling Weight Deflectometer (FWD) test on asphalt pavement

### **Texas A&M University**

Graduate Teaching Assistant, Department of Civil Engineering, College Station, TX, September 1999 – December 1999.

- Attended the Center for Teaching Excellence of Texas A&M University
- Assisted in teaching the CVEN421 Civil Engineering System I - Probability and Statistics for Civil Engineers

### **University of Toledo**

Graduate Research Assistant, Department of Civil Engineering, Toledo, OH, September 1998 - August 1999.

- Developed a database software for soil constitutive models using Visual Basic 6.0 and MS Access
- Performed soil sampling and testing

### **China JingYe Construction Engineering Contract Company**

Engineer, Beijing, China, May 1996 – August 1998.

- Performed design and analysis of soil and rock slope stability: retaining walls, piles and soil anchoring
- Managed construction projects of foundation and retaining walls

### **Central Research Institute of Building and Construction in MMI**

Assistant Engineer, Beijing, China, April 1994 – April 1996.

- Completed design and analysis of mat foundation, piles, and piers

#### **DEVELOPED SOFTWARE**

- Two-Way Street Signal Progression Software by Brooks Method, Programmed Using Microsoft Visual Basic and Microsoft Excel.
- Graduation of Aggregates, Programmed Using Visual Basic.
- Knowledge-based Database System for Soil Constitutive Properties, Programmed Using Visual Basic, Microsoft Access, and Excel.

#### **SELECTED PAPER REVIEWS**

- Reviewed paper for the **2006 TRB 85<sup>TH</sup> Annual Meeting**: *Sensitivity of Simulated Capacity to VISSIM Driver Behavior Parameter Modification*, by Lownes, N. and Machemehl, R., September 2005.
- Reviewed paper for the **2006 TRB 85<sup>TH</sup> Annual Meeting**: *Simulation-based critical gap distribution estimation using Genetic Algorithms*, by Geertje Hegeman and Serge P. Hoogendoorn, September 2005
- Reviewed paper for the **Journal of Transportation Engineering**: *Empirical Calibration of Intersection Saturation Flow Rate and Maximum Critical Lane Volume*, by Jenish Joseph and Gang-Len Chang, April 2004.
- Reviewed paper for the **Journal of Transportation Research Record**: *Ways to Treat Uncertainty in Level of Service Determination*, by Shinya Kikuchi and Partha Chakroborty, July 2002.