UNLV Transportation Activities

Nevada Transportation Conference Don Hayes, PhD, PE Chair, Civil and Environmental Engineering and Construction Director, Nevada University Transportation Center April 9, 2014

UNLV HOWARD R. HUGHES COLLEGE OF ENGINEERING

Goals

- Foster innovative, interdisciplinary solutions to Nevada's challenging transportation needs
- Involve undergraduate students in transportation research to encourage their interest in transportation-related fields
- Utilize external funding to educate graduate students who will join the local workforce and further contribute to transportation solutions in Nevada
- Bring other professionals to Nevada for conference and training activities, enhancing the stature of Nevada and contributing to the economy
- Provide top quality professional development and continuing education opportunities
- Establish strategic partnerships with other educational institutions and researchers to expand our capabilities

Interdisciplinary Approach

- Civil and Environmental Engineering and Construction
- Electrical and Computer Engineering
- Mechanical Engineering
- Marketing and International Business
- Psychology
- Public Health
- Economics

CEEC Faculty Involved

In transportation-related research...

- Sajjad Ahmad
- Nader Ghafoori
- David James
- Moses Karakouzian
- Mohamed Kaseko
- Barbara Luke

- Alex Paz-Cruz
- Aly Said
- Pramen P. Shrestha
- Haroon Stephen
- Hualiang (Harry) Teng
- Bruce Turner

Other UNLV Faculty Involved

Electrical and

Computing Engineering

Pushkin Kachroo Muthukumar Venkatesan Emma Regentova Brendan Morris

Mechanical Engineering

William Culbreth Robert O'Brien

Marketing and International Business Anjala Kirshen

Psychology

David Copeland

Transportation Partners

- NDOT LVMPD
- FHWA
- RITA
- RTCSN
- FAST
- City of Las Vegas
- Clark County

CEEC Research Areas

- Pavements and Materials
- Safety and Construction
- Geometric Design
- Traffic Planning and Simulation
- Pedestrian Safety
- Transit
- Rail/Intermodal Transport

Bridges and Pavements (Ghafoori)

- Evaluation of Asphalt Bridge Deck Joint Systems
- Use of Geotextiles for Strengthening and Reducing the Roadway Structural Sections
- Evaluation of Portland Cement Concrete Pavement Materials Properties to Validate/Calibrate MEPDG Performance Models

Conferences and Workshops (Ghafoori)

- Self-Consolidating Concrete for Building and Transportation Infrastructure, September 2008.
- 5th International Conference in Structural Engineering and Construction, September 2009
- Nevada Infrastructure Concrete Conference, November 2012
- Nevada Infrastructure Concrete Conference, November 2013
- University Professors workshop on Masonry Structures, March 2014

International Recycled Rubber Products Initiative

- Purpose Foster funded research in recycled rubber in asphaltic pavements, and to promote technology transfer in the utilization of recycled rubber asphalt.
- Moses Karakouzian, Serji Amirkhanian, Mehdi Khalili
- Started in 2013

Evaluation of New Innovations in Rubber Modified Asphalt Binders and Rubberized Asphalt Mixes for Nevada DOT

Objective

 Determine the feasibility of utilizing laboratory-blended Ground Tire Rubber (GTR), terminally blended GTR following NDOT's specifications, or other Crumb Rubber Modified products in order to meet the rheological and engineering properties of asphalt-modified binders and mixtures.

Conferences/Workshops

- 1st International Conference on Recycled Rubber Products, October 2013
 - 2-day conference in Las Vegas
 - 20 presentations
 - 120 participants from 10 countries
- 2nd International Conference on Recycled Rubber Products, September 2-5, 2014
 - Tropicana Hotel, Las Vegas
- Benefits of Using Rubberized Asphalt Workshop, December 2012
 - 80 attendees

Enhancing walkability in Las Vegas (Kaseko)

- Objectives
 - Identify ways to improve safety and viability of walking as a mode choice and for accessing transit
- Approach
 - The research study will explore what improvements can be made to enhance the Las Vegas pedestrian experience in terms of policy changes, education, infrastructure improvements amongst others.
- Tools
 - Walkability audits, checklists, indices, level of service indicators, and others designed to evaluate potential walkable environments

Evaluation Of Geometric Design Needs Of Freeway Systems Based On Traffic And Geometric Data (Teng)



Mineta National Transit Research Consortium

- Conduct research on transit, pedestrian, bicycles, complete streets
- Host seminars, workshops
- Host transportation summer camps for high school students
- Host sustainable transportation programs for middle school students





Developing Seamless Connections in the Urban Transit Network: A Look Toward High Speed Rail Interconnectivity



Enhancing Transit Service in Rural Areas and Native American Tribal

Communities



New UNLV MNTRC Projects

- Feasibility Study of Public Bike Sharing Program in Las Vegas
- Intermodal Bus and Bike Transportation in Southern Nevada
- Enhancing walkability in Las Vegas
- University of Nevada Las Vegas Community Transit Services

Railroad, High Speed Rail and Transit Initiative (Teng)

- Rail Transportation Certificate Program
 - Courses: Intro to Railroad Transportation, Railroad Engineering, Railroad Operations, Public Transportation, Freight Transportation, High Speed Rail
- Collaborators
 - MNTRC
 - Beijing Jiaotong University, China
 - Region 9 UTC UC Berkeley
 - X-Train
- AREMA National Seminars at UNLV
 - Summer 2013
 - Summer 2014

Crash Data Collection and Reporting (Paz)

- Real-time data Collection
- Smartphone and table applications
- Development of GPS-based systems
- Databases and visualization
- Development of hardware and software





Real-time Data Collection and Visualization (Paz)



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UNLV Safety Analyst Interface

Module III - Economic Appraisal and Priority Ranking



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State-of-the Art GIS Visualization (Paz)



Traffic Flow Model Development and Calibration (Paz)





Business Intelligence (BI) for Transportation

- New paradigm for providing real-time data analytics to NDOT personnel and the public.
- Focus is on informed decision making

Map Viewer Configuration (Paz)

- Import NAVTEQ data
 - Background maps
 - Themes
- Create new layers in the geometry theme to
 - display map data
 - COUNTIES_NEVADA
 - DISTRICTS_NEVADA
 - SUBDISTRICTS_NEVADA



- Average Present Service Rating by year for all counties
- Counties color filling in the map based on slider
 - Range indicated by user is in yellow



Map View Only



- Average Present Service Rating by districts
- Average Present Service Rating by counties also showed in color fill based on percentiles



Average International Roughness Index by pavement type for districts



- Crash Severity by county Severity and Year
- Color fill in the map is based on total number of crashes in the county (2007 – 2011)



NDOT Business Intelligence Dashboard (Paz)

- Decision makers can quickly access Analytics on a group-by-group basis
- Analysis imported into dashboard is modular and easily customizable

UNIVERSITY OF NEVADA LAS VEGAS						
NDOT Buisness Intelligence Dashboard						
This Dashboard is UNLV's response to the challenge issued by NDOT to Alexander Paz and his team on the 27 th of June.						
Team Members: Alexandre Paz, Alexandre Zanin, Erwan Beauvois, Gabriel Ahmed Sciochitano, Indira Khanal, Justin Baker, Kévin Le Prin, Naveen Veeramisti, Sébastien Bonnet.						
Pavement Management System	Safety Management System					
PMS	SMS					
Asset Management System	Maintenance Management System					
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TEMPORARY TRAFFIC CONTROL PLAN DEVELOPMENT WORKSHOP

Workshop covers:

Temporary Traffic Control Plan Selection Software Work Zone Safety Compendium of Documents Short-Term, Short-Duration, and Mobile Work Zones Urban Work Zones **L** For registration information, please visit: http://workzone.eng.wayne.edu I To visit the Temporary Traffic Control Plan Selection Software: http://workzone.eng.wayne.edu/ttcp.html

