



# OREGON DEPARTMENT OF TRANSPORTATION

Research Unit  
200 Hawthorne, Ste., B-240  
Salem, OR 97301

## SPR Quarterly Progress Report January 1, 2006 through March 31, 2006

ph: 503-986-2700  
fax: 503-986-2844

Date April 3, 2006

**TO:** Technical Advisory Committee Members:  
Cole Mullis, Oregon Department of Transportation  
Bruce Patterson, Oregon Department of Transportation  
Larry Ilg, Oregon Department of Transportation  
Darrin Neavoll, Oregon Department of Transportation  
Elizabeth Hunt, Oregon Department of Transportation  
Jim Huddleston, Asphalt Paving Association of Oregon  
Anthony Boesen, Federal Highway Administration  
Bud Furber, Pavement Services, Inc.

**FROM:** Norris Shippen, Research Coordinator (ph: (503) 986-3538)

### 1. Project

Mechanistic Pavement Design Input Parameters  
SPR-642

### 2. Key Dates

Start Date for ODOT: October 2005  
Completion Date for ODOT: June 2007

### 3. Principal Investigator

Todd V. Scholz, Ph.D., P.E.  
Department of Civil, Construction, and Environmental Engineering  
Oregon State University  
Corvallis, Oregon 97331-2302

### 4. Progress

- Task 1 – No additional work was accomplished on Task 1 as it would be prudent to get direction from the TAC before proceeding with the software evaluation phase of the task.
- Task 2 – Research during the report period focused on investigating the climatic needs associated with the M-E Design Guide and determining what climatic data exists within Oregon that can be used in the Design Guide.

The Design Guide currently uses hourly climate data from 19 Oregon weather stations. These data files (called .hcd files) can be downloaded in ‘zipped’ format from the Guide’s website. These files each contain roughly five years of data, with the most recent observations usually occurring in 2002. Because Oregon’s climate is so diverse (divided into 9 unique ‘zones’) it is believed that 19 weather stations are insufficient for dependable pavement designs.

AgriMet, part of the Bureau of Reclamation and a Pacific Northwest weather network, is the best (and only) source of additional hourly weather data in Oregon. An ODOT state map has been converted to a map of all of Oregon’s hourly weather stations. The map was created in Adobe Photoshop and saved in both .pdf and .jpg format and shows the precise location of each station. Additionally, an excel file has been created that provides a comprehensive listing of all Oregon weather stations, though it is believed that the only stations providing hourly data have been located on the map. A list of the hourly Design Guide stations and hourly AgriMet stations can also be found in this Excel file.

Using AgriMet’s hourly data in the Design Guide is a relatively complicated process. Thus, a step-by-step process has been developed for adding the appropriate information into the Design Guide software. The process basically involves taking data from AgriMet’s website and using Excel to convert it into a format that is usable in the Design Guide. It is important to realize that AgriMet does not provide percent sunshine data, a requirement of the Design Guide. It is anticipated that a software program can be developed to automate the procedure.

**5. Problems**

- The graduate student that was working on the project took a job in Portland and thus discontinued his work on the project.

**6. Work Planned for Next Quarter**

- Continue work on Task 1 (Backcalculation Software)
- Continue work on Task 2 (Climatic Data)
- Begin monthly data collection of strain, temperature, truck classification and weight, and FWD data at the I-5 North Jefferson site.
- Conduct analyses as appropriate for early assessment of the data.

**7. Finances**

SPR Project Summary

<b>VENDOR</b>	<b>FY'06</b>	<b>FY'07</b>	<b>FY'08</b>	<b>TOTALS</b>
ORIGINAL BUDGET				\$ -
<b>REVISED BUDGET</b>	<b>\$ 55,667</b>	<b>\$ 51,333</b>	<b>\$ -</b>	<b>\$ 107,000</b>
EXPENDITURES - VENDOR	<b>\$ 4,988</b>	<b>\$ (4,988)</b>	<b>\$ -</b>	<b>\$ -</b>
<b>BALANCE</b>	<b>\$ 50,679</b>	<b>\$ 56,321</b>	<b>\$ -</b>	<b>\$ 107,000</b>
<b>ODOT</b>	<b>FY'06</b>	<b>FY'07</b>	<b>FY'08</b>	<b>TOTALS</b>
ORIGINAL BUDGET	<b>\$ 40,000</b>	<b>\$ 80,000</b>	<b>\$ 40,000</b>	<b>\$ 160,000</b>
<b>REVISED BUDGET</b>	<b>\$ 45,333</b>	<b>\$ 9,250</b>	<b>\$ 0</b>	<b>\$ 54,583</b>
EXPENDITURES - ODOT	<b>\$ 1,330</b>	<b>\$ 4,988</b>	<b>\$ -</b>	<b>\$ 6,318</b>
<b>BALANCE</b>	<b>\$ 44,003</b>	<b>\$ 4,262</b>	<b>\$ 0</b>	<b>\$ 48,265</b>
<b>PROJECT</b>	<b>FY'06</b>	<b>FY'07</b>	<b>FY'08</b>	<b>TOTALS</b>
ORIGINAL BUDGET	<b>\$ 40,000</b>	<b>\$ 80,000</b>	<b>\$ 40,000</b>	<b>\$ 160,000</b>
<b>REVISED BUDGET</b>	<b>\$ 101,000</b>	<b>\$ 60,583</b>	<b>\$ 0</b>	<b>\$ 161,583</b>
EXPENDITURES - PROJECT	<b>\$ 6,318</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ 6,318</b>
<b>BALANCE</b>	<b>\$ 94,682</b>	<b>\$ 60,583</b>	<b>\$ 0</b>	<b>\$ 155,265</b>