To: Eric Weaver

CC: TAC

From: David Orr

Date: 29 September 2006
Re: TAC and Center Operators Meeting
Helena Montana
September 17, 2006

Note: Due to flight delays for Eric Weaver, the meeting was held in two parts. The first portion occurred on Sunday morning. The other part took place after the FWDUG reception on Sunday evening.

FWD Calibration Study and FWD Calibration Centers Meeting
SUNDAY MORNING
Opened @ 9:10am
Lynne Irwin moderated

First, there was a discussion of what to do about Eric Weaver's delay due to flight problems. It was agreed to finish the meeting including the reports from the calibration centers at 8pm on Sunday after the FWDUG meeting opening reception.

Reviewed the agenda for the morning meeting.
Discussion of the FWD calibration project including a demonstration of the software *PDDX Converter* and *WinFWDCal.*
Review administrative details of the calibration project
2005-2006 Cal Center data

The administrative details and the reports from the calibration center were deferred until the evening meeting. A request was made to provide written information on the calibration for the last two years to David Orr.

FWD Calibration Project Review

Lynne Irwin made a presentation on status at FWD calibration project using Power Point. After he was done, there was a short question and answer period. The questions and answers are listed below.

- What is the reason for down pressure when holding the columnar calibration stand?
    - The purpose of the down pressure is just to provide a dampening of the vibrations during the calibration. As such, only five to ten pounds of downward force is needed.
- What is the requirement for verticality when holding the stand?

    - As long as the stand is held so that the bubble level attached to the stand has the bubble in the leveling circle, it will meet the requirements of the calibration. This amounts to a maximum out of plumb of less than 1 degree.
- Why are the sensors placed in a column for reference calibration?
    - In order to have all of the deflection sensors calibrated at the same time they can be in many different configurations. The research showed that a platter or tree – like design would not work so a columnar stand was designed and is being used.
- What is the minimum number of drops needed for reference calibration?
    - The final research is not complete, but it appears that there will be a relationship between the number of drops and the average deflection during the calibration. If a test pad stiffens up to the point that the recommended deflections of 20 mils in not achievable then additional drops will be needed to reduce the random error to an acceptable level.
- Are there any changes to the concrete slab design?
    - None are anticipated since no pads have failed in fatigue to date. It is recommended that load cell calibration not be done on the test pad to reduce dame to the pad.

BREAK

After a short break, each person at the meeting introduced themselves.

David Orr showed demonstrations of the two software program created for the project: *PDDX Converter* and *WinFWDCal*. *PDDX Converter* should be distributed for beta testing by the calibration centers and the FWD manufacturers in a week or so. *WinFWDCal* will be distributed as part of the installation at the four LTPP calibration centers and a simulation version should be available for Beta testing well before the first installation.

Meeting was adjourned until Sunday evening.

FWD Calibration Study and FWD Calibration Centers Meeting
Sunday Evening
Reopened @ 7:30pm 9/17/2006
Moderated by Eric Weaver

FWD Calibration Project Administrative Details

Eric provided a brief intro and discussed some of the administrative details of the FWD Calibration Study project. Also mentioned that two FWD Calibration Centers are currently of of service (Colorado and Minnesota).

Eric discussed the FWD operational Manual which is schedule to take 12 months to complete. Although it is being done through the pooled fund project, the funding is a different pool of money and will not affect the monies available in the pool.

Eric also mention the backcalculation research project that is about to being and will be reported on during the FWDUG meeting. Finally, a Dynatest specific maintenance manual should be available this fall.

There was some discussion on the monies available for the pooled-fund activities. Of $822,000 promised from 16 states, only $650,000 has been committed and is in the bank. Long-term support issues still a need that should be addressed.

Technical support for the new system should included installation of the new calibration system at the four LTPP regional FWD Calibration Centers by December 8, 2006. For other pooled fund/or private centers, it is anticipated the cost for the hardware will be around $25,000 with an additional $25,000 needed for training and installation.

The last discussion was a letter drafted by Eric to be sent to the chief engineer for each state to ask for additional funding. Eric is not sure of when the letter should be sent during the calendar year and would like feedback from the TAC. Please send Eric any suggestions you may have on this topic.

Calibration Center Reports 2005-2006 & 2004-2005

Each center reported on the FWD calibrations done in the last year as well as issues relating to the operation of the calibration center. In addition, information on the 2004-2005 calibrations was provided separately. Thanks to Tim Worstell for providing most of this information. See the tables below for the number of calibrations done at each center in the last two years. The notes below are just on the highlights above and beyond the number of calibrations. Here is a list of the person reporting the information from each center.

Colorado – Ed Trujillo
Texas – Doug Chalman
Indiana – Jim Wooten
Pennsylvania – Dave Wassel
Minnesota – Dave Bullock
Kansas DOT – Curtis Eichman
Dynatest – Dave Morrow

Colorado
The center was moved to a new facility in the last year. This included the building of a new test and concrete block. Basically, the center is currently shut down.

Texas
Tried calibration of an HWD but there was too much vibration to complete the calibration.

Pennsylvania
No problems except for a couple at poorly maintained FWDs.

Minnesota
Center moved to a new location in the last year. Will be a seasonal center and still concerned about beam movement and standard error problems at the center.

Table 1 – 2005-2006 FWD Calibrations

Calibration Center	Calibrations by Device	Calibrations by Brand of FWD	Calibrations by Owner	Notes
Colorado	20 FWDs 2 HWDs	1 KUAB Remainder 50% each of Dynatest and JILS	20% private 80% government	Will only be open from October 1 – April 1
Texas	20 FWD 1 HWD	1 Carl Bro 16 Dynatest 4 JILS	Mostly DOTs A couple of private owners	
Pennsylvania	24 FWD 1 HWD	3 KUAB 4 JILS 17 Dynatest FWDs 1 Dynatest HWD	2 Universities 7 consultants 13 DOTs 3 Federal	
Minnesota	6 FWD	6 Dynatest	5 DOT 1 consultant	Open from May – September
Dynatest	13 FWD 7 HWD	19 Dynatest 1 JILS	11 DOTs 9 consultants	
Indiana	12 FWD	12 Dynatest	All owned by Indiana DOT	Certified by MACTEC
Kansas	1 FWD	1 Dynatest	Owned by Kansas DOT	

Table 2 – 2004-2005 FWD Calibrations

Calibration Center	Calibrations by Device	Calibrations by Brand of FWD	Calibrations by Owner	Notes
Colorado	26 total	2 KUAB 12 JILS 12 Dyantest		
Texas	21 total	18 Dynatest 3 JILS	8 LTPP	
Pennsylvania	24 total	7 KUAB 1 JILS 15 Dynatest FWDs 1 Carl Bro		
Minnesota	none			
Dynatest	23 total	Dynatest JILS		
Indiana	4 FWD	4 Dynatest	All owned by Indiana DOT	
Kansas	**1 FWD**	**1 Dynatest**	**Owned by Kansas DOT**	

Eric thanked Lynne for running the meeting this morning.

Meeting closed at approximately 8:50 pm

Attendance List for Sunday morning portion of the meeting

Name	Organization
Doug Chalman	Texas DOT
Abbas A Butt	Engineering & Research Int'l, Inc./KUAB
M. Makbul Hossain	NYSDOT
Tim Worstell	Engineering & Research Int'l, Inc./KUAB
Affan Habib	Virginia DOT
Hans Christian Korsgaard	Carl Bro A/S
Richard Stubstad	ARA, Inc
Rene Clemen	Carl Bro A/S
Lisa Rombough	South Dakota DOT
Yigong, Ji	Indiana DOT
Richard Wildermuth	R.D. McQueen
Dave Morrow	Dynatest Consulting, Inc.
Randy Milton	Dynatest Consulting, Inc.
Calvin Heinl	Pennsylvania DOT
Aaron Ping	Indiana DOT
Derrick Nwel	DOT
Jeffrey Wages	Mississippi DOT
Jim Wooten	Indiana DOT
Dave Bullock	Minnesota DOT
Dave Wassel	Pennsylvania DOT
Gary Sanati	JILS FWD
Ken Hallgren	Kansas DOT
Curtis Eichman	Kansas DOT
Ed Trujillo	Colorado DOT
Steven Henrichs	North Dakota DOT
Emmanuel Uwaibi	Florida DOT